366

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PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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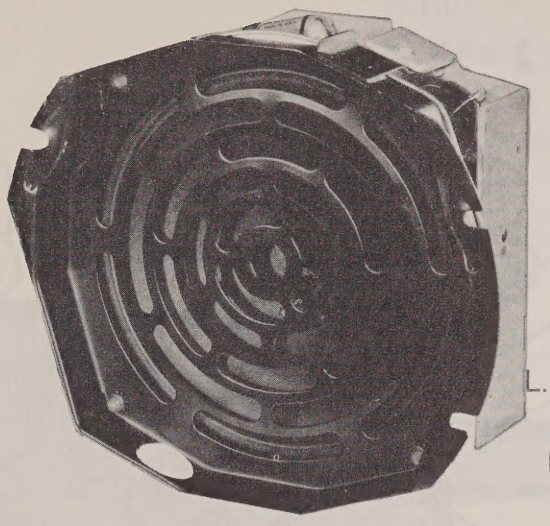
CHEVROLET
MODEL 3725156

CHEVROLET
MODEL 3725156



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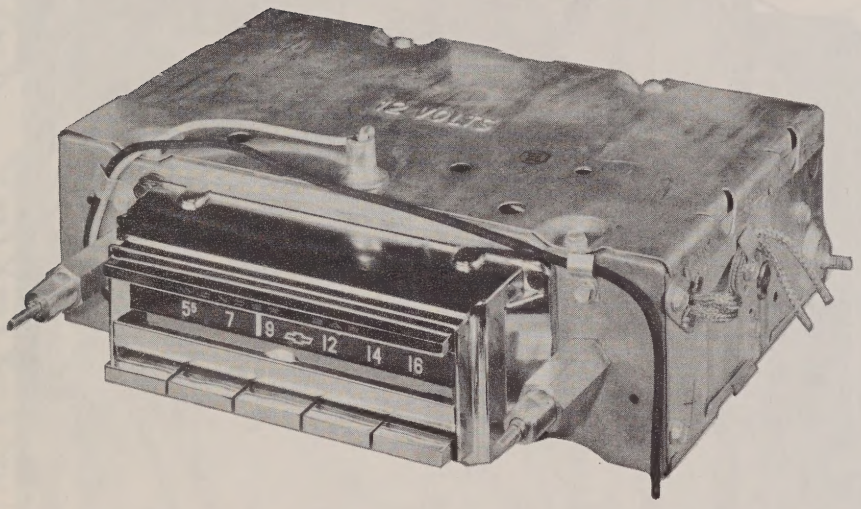

CHEVROLET
MODEL 3725156

TRADE NAME	Chevrolet Model 3725156 (For 1956 & 1957 Chevrolet Corvette Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12BF6 Det.-AVC-AF Amp., 12AU7 Trigger, 12X4 Rectifier
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE--BROADCAST	540-1600KC RATING 3 Amp.@ 12.6 Volts DC

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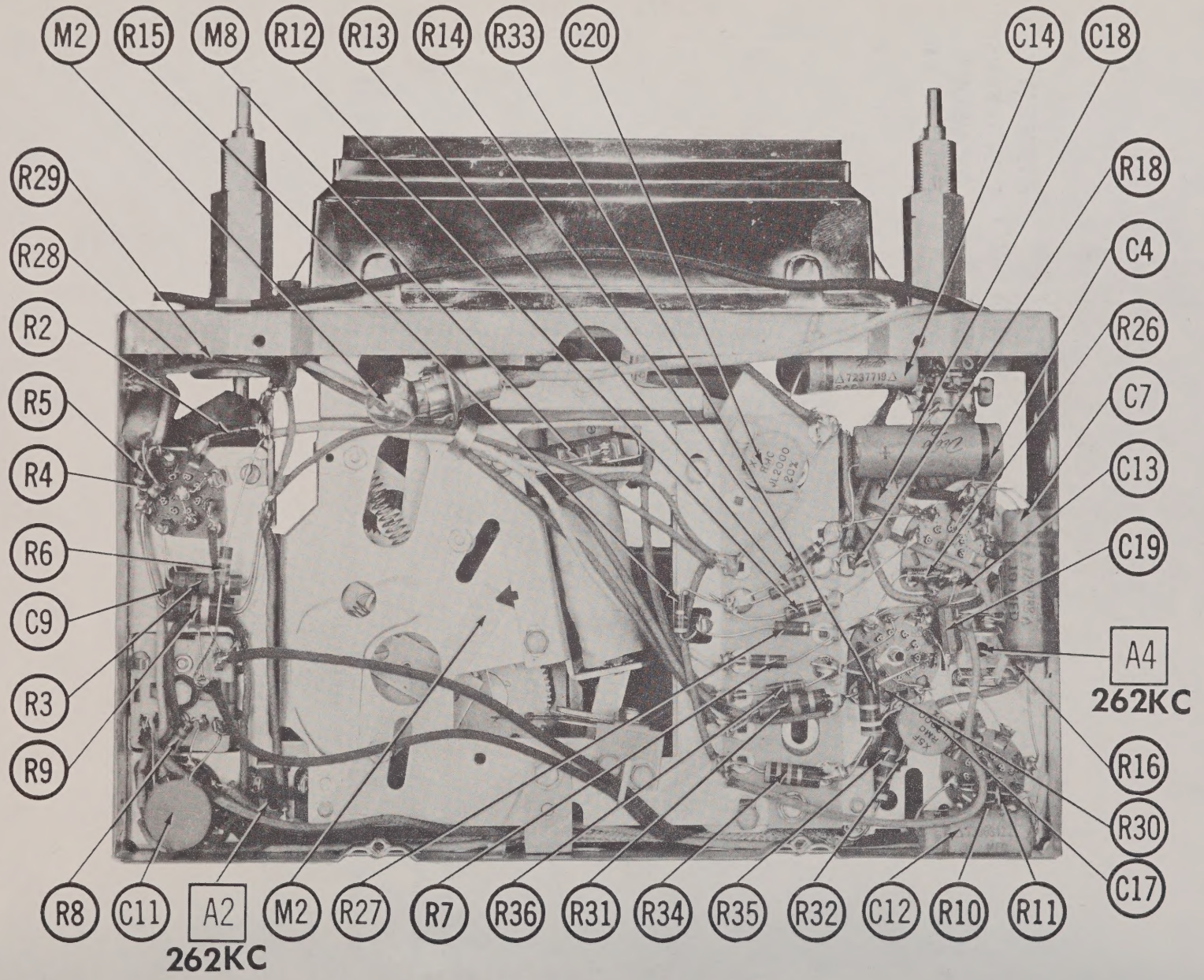
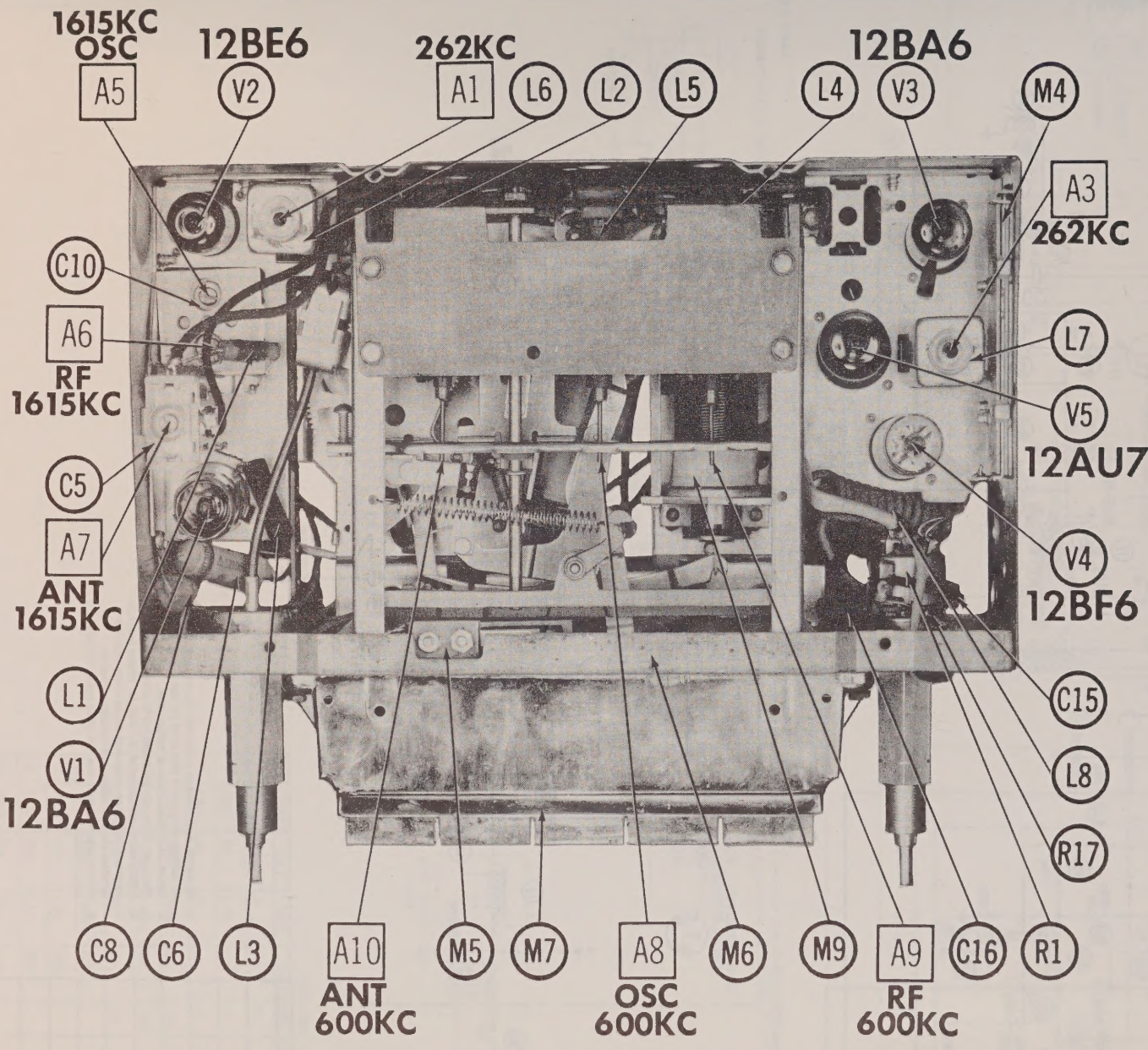


TUNER CHASSIS - BOTTOM VIEW



TUNER CHASSIS - TOP VIEW

PROPERTY OF
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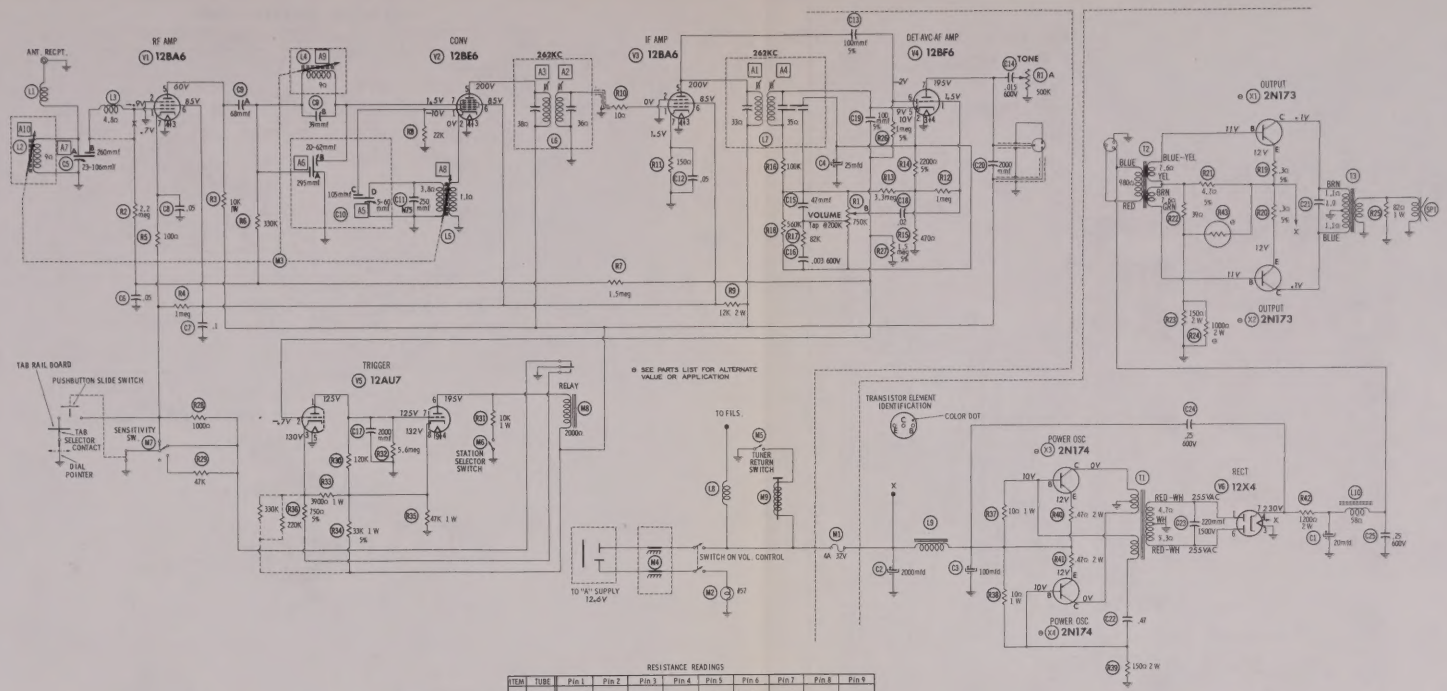
DENVER, COLORADO

CHEVROLET
MODEL 3725156



⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	5.2Meg	Bt	0Ω	0Ω	↑10K	↑12K	100Ω		
V2	12BE6	22K	1.1Ω	0Ω	0Ω	↑125Ω	↑12K	3.3Meg		
V3	12BA6	46Ω	0Ω	0Ω	0Ω	↑125Ω	↑12K	150Ω		
V4	12BF6	1Meg	8000Ω	0Ω	0Ω	390K	2.5Meg	↑1300Ω		
V5	12AU7	↑150K	1.5Meg	50K	0Ω	0Ω	↑3200Ω	150K	47K	NC
V6	12X4	4.7Ω	NC	0Ω	0Ω	TP	5.3Ω	20K (Min)		
		Type	Base	Collector	Emitter					
X1	2N173	200Ω	1.1Ω	350Ω						
X2	2N173	200Ω	1.1Ω	200Ω						
X3	2N174	10Ω	.2Ω	1.1Ω						
X4	2N174	10Ω	.2Ω	1.1Ω						

† MEASURED FROM PIN 7 OF V6.
NC NO CONNECTION.
TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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366-1

ALIGNMENT INSTRUCTIONS

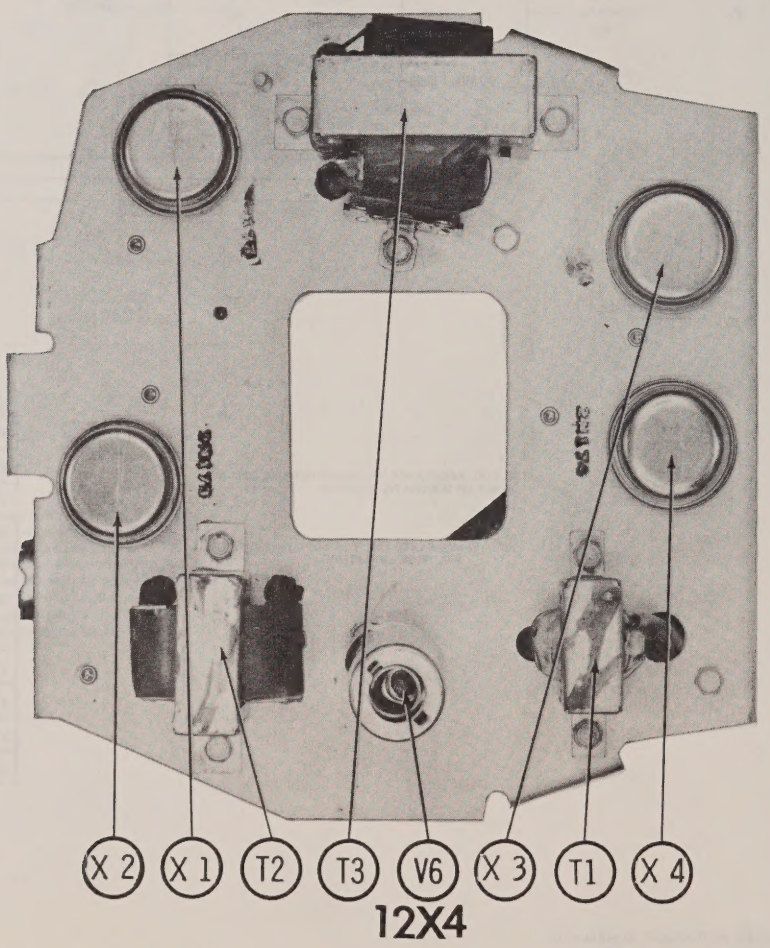
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Sensitivity control to position 1.
Tone control to breble.
Signal generator should not exceed 2 volts at VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400∿ Mod)	High freq. end stop	Across C6 (AVC Filter)	A1, A2, A3	To tune to high frequency end stop, place a .070" feeler gauge (or Bare #13 wire) in slot against high frequency stop. Turn manual control until the planetary arm is against feeler gauge. Adjust A1, A2 and A3 for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection.
	If necessary, adjust oscillator coil core (A8) so that it is 1 25/32" from mounting end of coil form.						
3.	68MMF	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A5, A6, A7	Use feeler gauge as in step 1. Adjust A5, A6 and A7 in order given for maximum deflection.
4.	"	"	600KC	Tune to 600KC signal	"	A9, A10	Adjust for maximum deflection.
5.	"	"	1615KC	Tune to 1615KC signal	"	A6, A7	"
6.	"	"	900KC	Tune to 900KC signal	"		If necessary, adjust pointer adjustment screw so pointer coincides with 900KC on dial.
7.	With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC, adjust A7 for maximum volume.						

PUSHBUTTON ADJUSTMENT

1. Turn receiver on and allow 15 minute warm-up period.
2. Antenna should be fully extended.
3. Open the hinged tab cover below dial scale, exposing the five red pushbutton setting tabs.
4. Starting at left end of dial, tune in manually first desired station and move the first pushbutton setting tab until it lines up with dial pointer tip.
5. Repeat this procedure for remaining pushbuttons working from left to right.



OUTPUT CHASSIS – TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Det. -AVC-AF Amplifier	12BF6	
V5	Trigger	12AU7	
V6	Rectifier	12X4	

TRANSISTORS

ITEM No.	USE	TYPE	NOTES
X1	Output	2N173	Note 1
X2	Output	2N173	Note 1
X3	Power Oscillator	2N174	Note 2
X4	Power Oscillator	2N174	Note 2

Note 1. X1 & X2 are a matched pair. Type 2N178 (Part #1221071) used as substitute.
Note 2. Type 2N190 (Part #1221038) used as substitute.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	20	450	6329	PRS450V20	BR2045	TC75	TD-20-450	FM-4520	TVA-1709
C2	2000	15	7268269		BR20001	TC1501		S-025	R2425 *
						TC1501			
C3	100	25	6301	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C4	25	25	6320	PRS25V25	BBR25-25	TC26	TD-25-25	FM-0225	TVA-1205

* Non-Catalog Item.

FIXED CAPACITORS

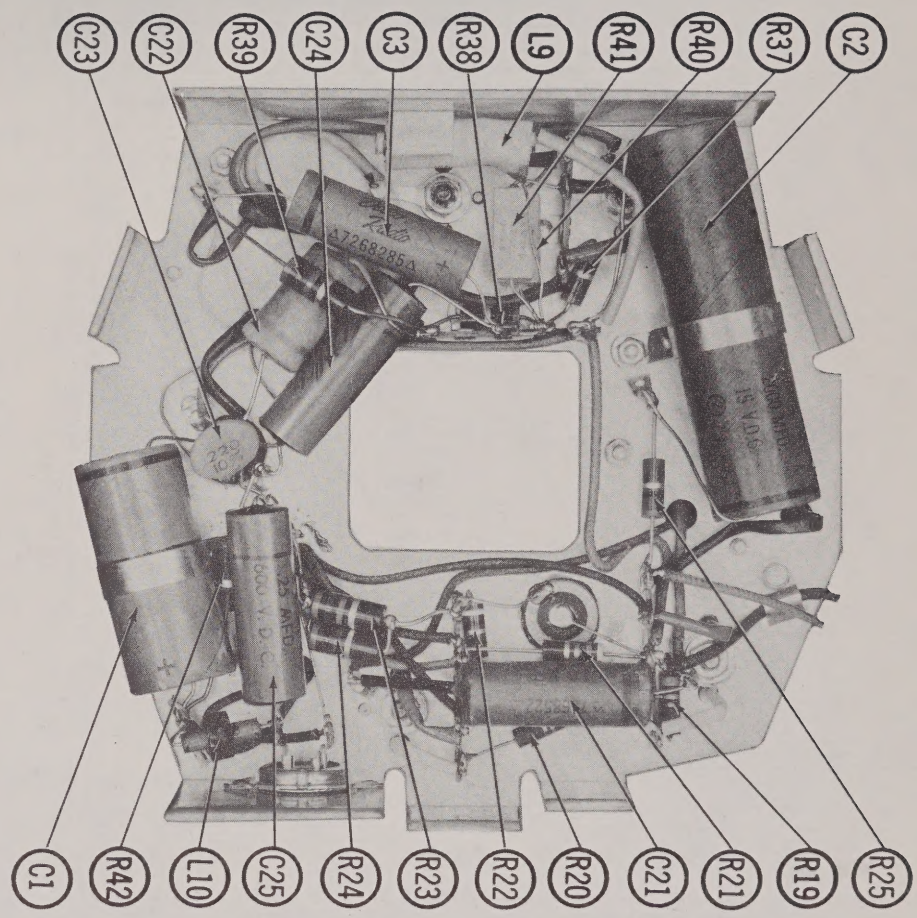
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5A	23-105		7265255							
B	260									
C6	.05	200	6512	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C7	.1	400	6513	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C8	.05	200	6512	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C9A	68			BPD-000068	DD-680	L10Q68	ED-68	UC-5468	5GA-Q68	
B	39			SI39	DD-390	L10Q39	ED-39	UC-5439	5GA-Q39	
C10A	295									
B	20-62									
C	105		7242454							
D	5-60									
C11	250		7266596							N75
C12	.05	200	6512	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C13	100	500	1219498	1469-0001	TCZ-100	22R5T1	TCO-100	ZT-531	MS-31	5%
C14	.015	600	7237719	BPD-015	DD16-153	CUB6S15	ED-015	GEM-6115	6TM-S15	
C15	47		6367	1468-000047	D6-470	5W5Q47	ED-47	UC-5447	1FM-447	
C16	.003	600	6529	BPD-0033	D6-302	CUB6D3	GP-3000	GEM-623	6TM-D3	
C17	2000		6528	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C18	.02	200	6511	BPD-02	DF-203	CUB2S2	ED-02	GEM-412	2TM-S2	
C19	100	500	1219498	1469-0001	TCZ-100	22R5T1	TCO-100	ZT-531	MS-31	5%
C20	2000		6352	BPD-002	DD-202	1W5D2	ED-002	DC522	1FM-22	
C21	1.0	100	6593	P288N-1.0		CUB2W1		GEM-21	2TM-M1	
C22	.47	100	6592	P288N-47		CUB2P47		GEM-2047	2TM-P47	
C23	220	1500	7268270							N1500
C24	.25	600	6541	P688N-25		CUB6P25		GEM-6025	6TM-P25	
C25	.25	600	6541	P688N-25		CUB6P25		GEM-6025	6TM-P25	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	7265302	F1-41		QJ-703A	UF55A	Tone
B	750K	½		R2-59			UR16T25	Volume, Tap @ 200K
C	Switch			KB-7			US-27	
D	Bushing			AK-27			EB-214	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DELCO PART No.	IRC PART No.	
R2	2.2Meg		1239	BTS-2.2Meg	
R3	10K	1	1174	BTA-10K	
R4	1Meg		1235	BTS-1Meg	
R5	100Ω		1113	BTS-100	
R6	330K		1229	BTS-330K	
R7	1.5Meg		1237	BTS-1.5Meg	
R8	22K		1215	BTS-22K	
R9	12K	2	1276	BTB-12K	
R10	10Ω		1101	BTS-10	
R11	150Ω		1115	BTS-150	
R12	1Meg		1235	BTS-1Meg	
R13	3.3Meg		1241	BTS-3.3Meg	
R14	2200Ω 5%		1220171	BTS-2200 5%	
R15	470Ω		1121	BTS-470	
R16	100K		1223	BTS-100K	
R17	82K		1222	BTS-82K	
R18	560K		1232	BTS-560K	
R19	.3Ω 5%		7268273		
R20	.3Ω 5%		7268273		
R21	4.7Ω 5%		1097		
R22	39Ω		1108	BTS-39	
R23	150Ω	2	1189	BTB-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	DELCO PART No.	IRC PART No.	
R24	1000Ω	2		BTB-1000	Note 1
R25	82Ω	1	1149	BTA-82	
R26	1Meg 5%		1220169	BTS-1Meg 5%	
R27	1.5Meg 5%		1219492	BTS-1.5Meg 5%	
R28	1000Ω		1125	BTS-1000	
R29	47K		1219	BTS-47K	
R30	120K		1224	BTS-120K	
R31	10K	1	1174	BTA-10K	
R32	5.6Meg		1244	BTS-5.6Meg	
R33	3900Ω	1	1169	BTA-3900	
R34	33K 5%	1	7266230	BTA-33K 5%	
R35	47K	1	1259	BTA-47K	
R36	750Ω 5%		7266320	BTS-750	
R37	10Ω	1	1138	BTA-10	
R38	10Ω	1	1138	BTA-10	
R39	150Ω	2	1191	BTB-150	
R40	.47Ω	2	7268271		
R41	.47Ω	2	7268271		
R42	1200Ω	2	1200	BTB-1200	
R43			1221036		Note 2

Note 1. Value of R24 may vary. (Refer to Transistor Bias Adjustment).
Note 2. Special temperature compensating type resistor.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @1.8A	500VCT @.032A			7268194					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8:	1	7268192				TR-23 ①		①Drill New Mtg. Holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	30Ω CT	3-4Ω	7268193				TR-59		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	7268177	8A21	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		DELCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Antenna Coupling Coil	7255738	19-1004	BC-565	4610	6.5 Microhenries
L2	Antenna Coil	7257979				
L3	RF Choke	7240251	19-6022		4626	26 Microhenries
L4	RF Coil	7257979				
L5	Oscillator Coil	7263287				
L6	Input IF	1219508		BC-319	13-PH1	
L7	Output IF	1220204				
L8	Fil. Choke	1217846				1.4 Microhenry
L9	"A" Supply Choke	7265642				187 Microhenries
L10	Filter Choke	7268195				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	4A 32V	147682	153-R	307004 (SFE 4A)	155004	SFE4	HRF

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Dial Light		#57
M3	Tuner		
M4	Spark Plate	1220885	Dual Unit
M5	Switch	7263340	Tuner Return
M6	Switch	7265300	Station Selector
M7	Switch	7267298	Sensitivity
M8	Relay	1220326	
M9	Solenoid	1220685	Includes Plunger
	Contacts	1220193	Pushbutton Slide (Set Of 5)
	Contacts	1220191	Tab Selector (Set Of 5)
	Dial Glass	7265308	
	Pointer	7265297	
	Knob	7265769	Tone, Sensitivity
	Knob	1990841	On-Off-Volume, Tuning
	Pushbutton #1	1220330	
	Pushbutton #2	1220331	
	Pushbutton #3	1220332	
	Pushbutton #4	1220333	
	Pushbutton #5	1220334	

BIAS ADJUSTMENT

TRANSISTOR BIAS ADJUSTMENT

The bias adjustment should be checked if the 2N173 output transistors (X1, X2) are replaced. To do this, insert a milliameter in series with the center tap of the primary winding of the output transformer (T3). The milliameter should indicate 100MA. If necessary, replace R24 with one or more resistors of suitable value until the milliameter does indicate 100MA.

PHOTOFACT* Folder

*TRADE MARK

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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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MODEL DC-12M (Ch. 493)

CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)

TRADE NAME	Crosley	MODELS	CHASSIS
		DC-10B, M, DC-12M, DC-14M, DC-16B, DC-18N, DT-12B, M	493
		DC-11B, M, DC-13M, DC-15M, DC-17B, DC-19N, DT-13B, M	494
MANUFACTURER	Crosley Division, AVCO Manufacturing Corp,, Cincinnati, Ohio		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 170 Watts, 1.5 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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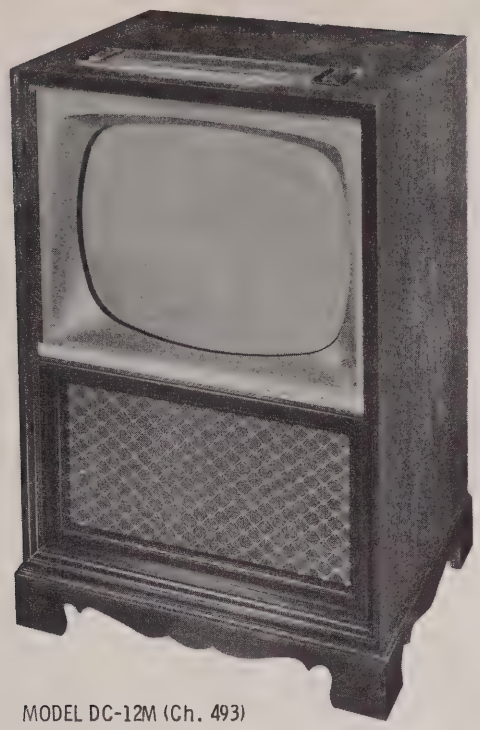


MODEL DC-12M (Ch. 493)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODELS	CHASSIS
DC-10B, M, DC-12M, DC-14M, DC-16B, DC-18N, DT-12B, M	493
DC-11B, M, DC-13M, DC-15M, DC-17B, DC-19N, DT-13B, M	494

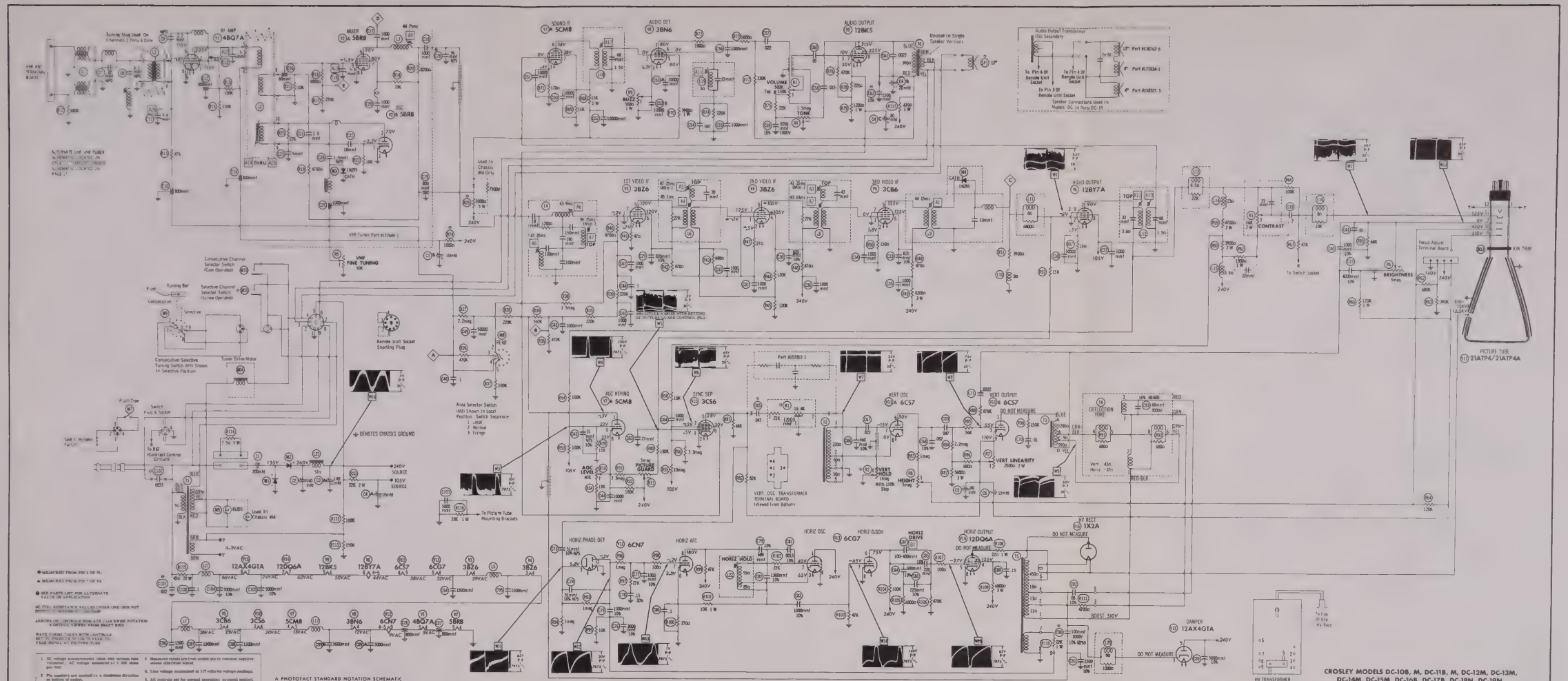
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from the top.
2. Remove 7 wood screws and the rear cover.
3. Remove 1 wood screw and the antenna terminals board.
4. Remove 2 speaker leads and 2 control cable plugs.
5. Remove 2 wood screws holding the AC interclock.
6. Remove 2 wood screws holding the remote tuning socket.
7. Remove 2 wood screws holding the side chassis brackets.
8. Remove 10 chassis bolts from the bottom.
9. Remove the chassis.
10. Remove 4 speaker nuts and the speaker.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1957
DENOTES CHASSIS GROUND
Tuning Slug Used On Channels 2 Thru 6 Only
Used In Chassis 494
Used In Chassis 493
Remote Unit Socket Shorting Plug
To Picture Tube Mounting Brackets
To Switch Socket
To Cap Of V16 Hv Rect
Speaker Connections Used In Models DC-14 Thru DC-19
Unused In Single Speaker Versions
Consecutive-Selective Tuning Switch Shown In Selective Position
Area Selector Switch (MB) Shown In Local Position Switch Sequence: 1 Local 2 Normal 3 Fringe
VERT. OSC. TRANSFORMER TERMINAL BOARD Viewed From Bottom
HV TRANSFORMER (TERMINAL BOARD Viewed From Transformer Side)
PICTURE TUBE
V17 21ATP4/21ATP4A
V1 4BQ7A
V2 5BR8
V3 5BR8
V4 3BN6
V5 12BK5
V6 12BY7A
V7 5CM8
V8 3BZ6
V9 3CB6
V10 3CS6
V11 6CS7
V12 6CN7
V13 6CG7
V14 12DQ6A
V15 12AX4GTA
V16 1X2A
V17 21ATP4/21ATP4A
V18 12AV6
V19 12AT7
V20 12AX4GTA
V21 12DQ6A
V22 6CS7
V23 6CG7
V24 6CN7
V25 3BZ6
V26 3CB6
V27 3CS6
V28 5CM8
V29 3BN6
V30 6CN7
V31 4BQ7A
V32 5BR8
V33 3BZ6
V34 6CS7
V35 12DQ6A
V36 12BK5
V37 12AX4GTA
V38 12AV6
V39 12AT7
V40 12BY7A
V41 3CB6
V42 3CS6
V43 5CM8
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V49 6CS7
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V52 12AX4GTA
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V54 12AT7
V55 12BY7A
V56 3CB6
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V58 5CM8
V59 3BN6
V60 6CN7
V61 4BQ7A
V62 5BR8
V63 3BZ6
V64 6CS7
V65 12DQ6A
V66 12BK5
V67 12AX4GTA
V68 12AV6
V69 12AT7
V70 12BY7A
V71 3CB6
V72 3CS6
V73 5CM8
V74 3BN6
V75 6CN7
V76 4BQ7A
V77 5BR8
V78 3BZ6
V79 6CS7
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V81 12BK5
V82 12AX4GTA
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V86 3CB6
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V107 5BR8
V108 3BZ6
V109 6CS7
V110 12DQ6A
V111 12BK5
V112 12AX4GTA
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V115 12BY7A
V116 3CB6
V117 3CS6
V118 5CM8
V119 3BN6
V120 6CN7
V121 4BQ7A
V122 5BR8
V123 3BZ6
V124 6CS7
V125 12DQ6A
V126 12BK5
V127 12AX4GTA
V128 12AV6
V129 12AT7
V130 12BY7A
V131 3CB6
V132 3CS6
V133 5CM8
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V961 4BQ7A
V962 5BR8
V963 3BZ6
V964 6CS7
V965 12DQ6A
V966 12BK5
V967 12AX4GTA
V968 12AV6
V969 12AT7
V970 12BY7A
V971 3CB6
V972 3CS6
V973 5CM8
V974 3BN6
V975 6CN7
V976 4BQ7A
V977 5BR8
V978 3BZ6
V979 6CS7
V980 12DQ6A
V981 12BK5
V982 12AX4GTA
V983 12AV6
V984 12AT7
V985 12BY7A
V986 3CB6
V987 3CS6
V988 5CM8
V989 3BN6
V990 6CN7
V991 4BQ7A
V992 5BR8
V993 3BZ6
V994 6CS7
V995 12DQ6A
V996 12BK5
V997 12AX4GTA
V998 12AV6
V999 12AT7
V1000 12BY7A

TUBE PLACEMENT CHART

PROPERTY OF
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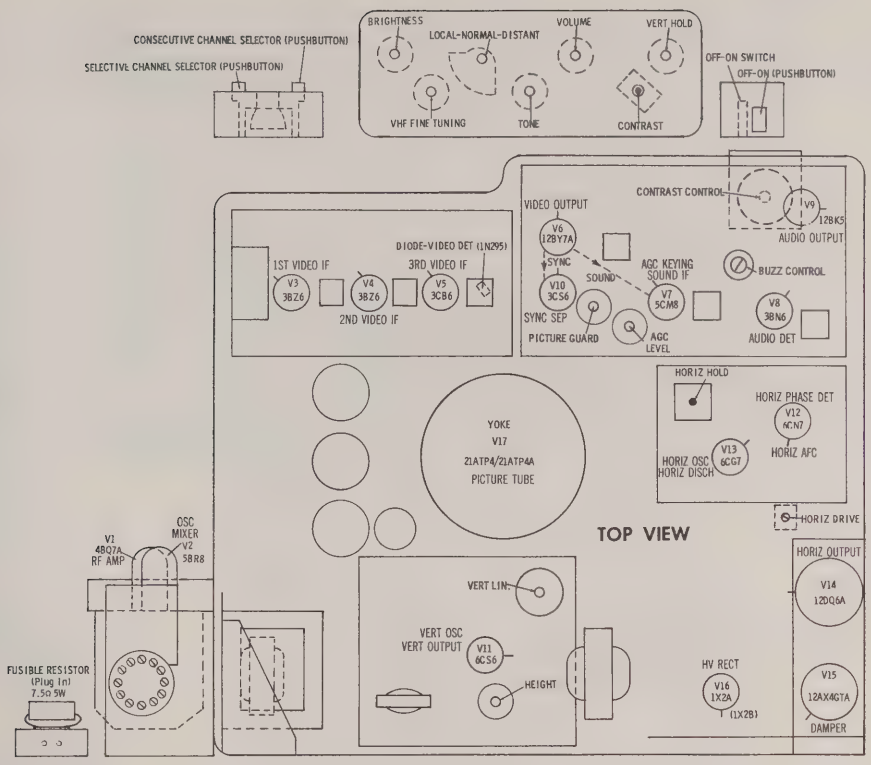
3924 MEADE ST.
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

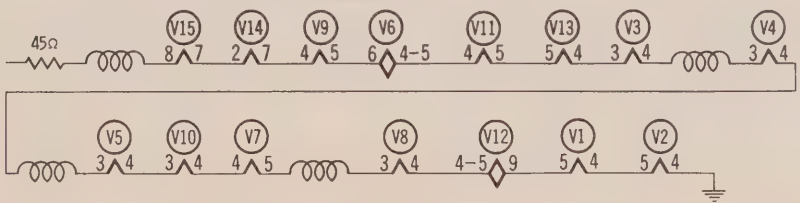
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R114), Rectifiers (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M4), V6**
No pic, no sound, has snow - **V1, V2**
No pic, has sound, has raster - **V6, V17**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V10, V9**
No horiz. sync - **V10, V9, V12**
No vert. or horiz. sync - **V10, V9**

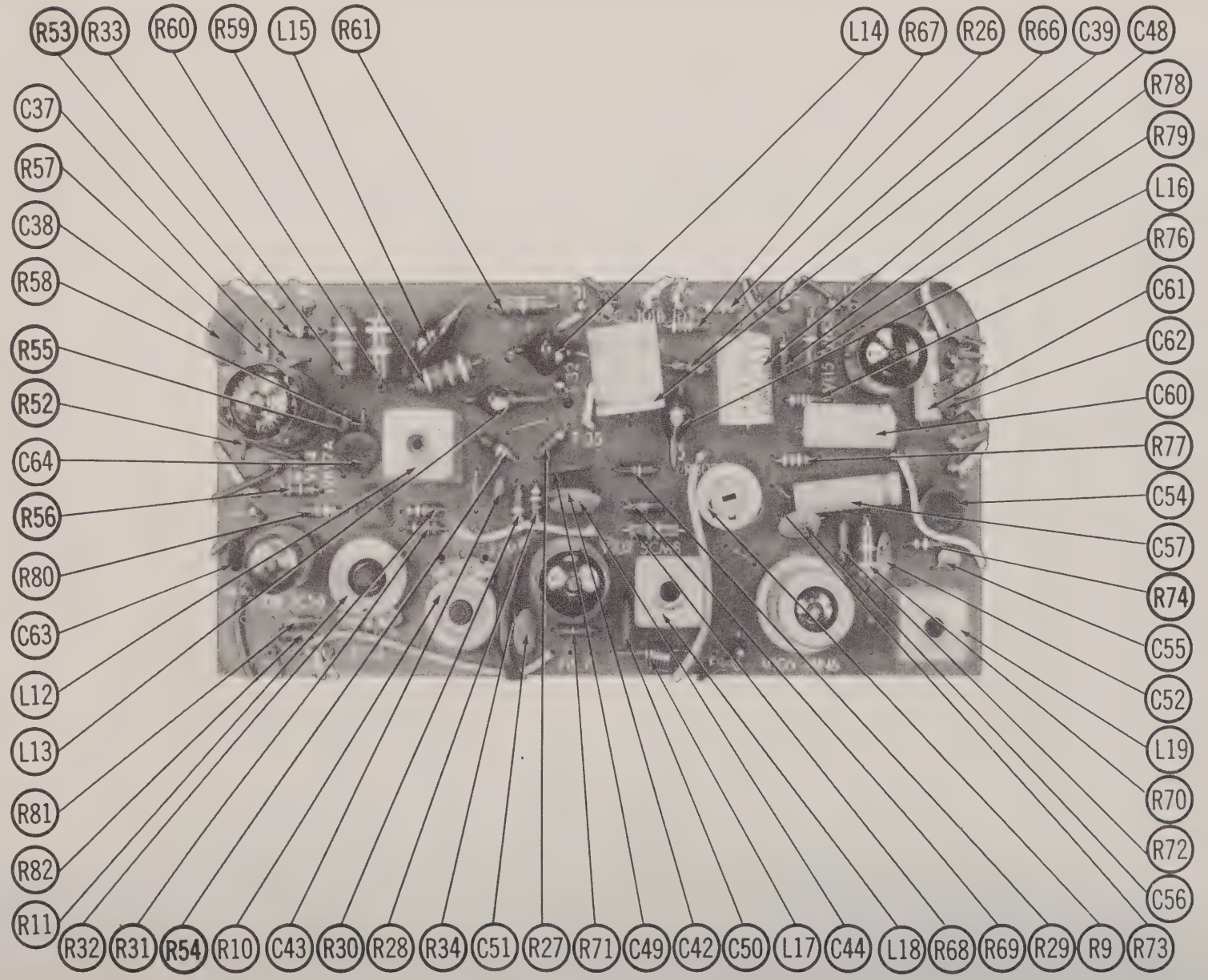
SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16, V17**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V13, V14, V15**
Narrow picture - **V13, V14, V15, M1, M2**
Vert. off freq. - **V11**
Horiz. off freq. - **V13**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).

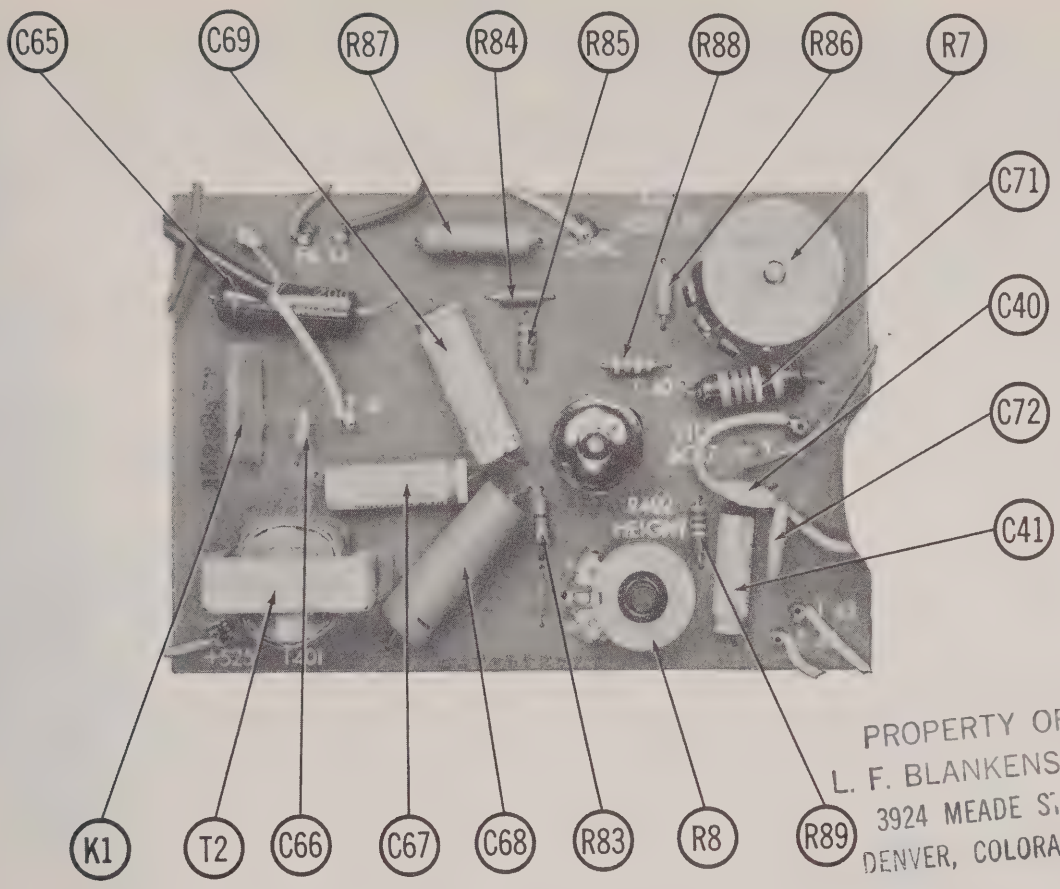


SET 366 FOLDER 2

CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)



VIDEO, SYNC. & SOUND PRINTED BOARD



PROPERTY OF
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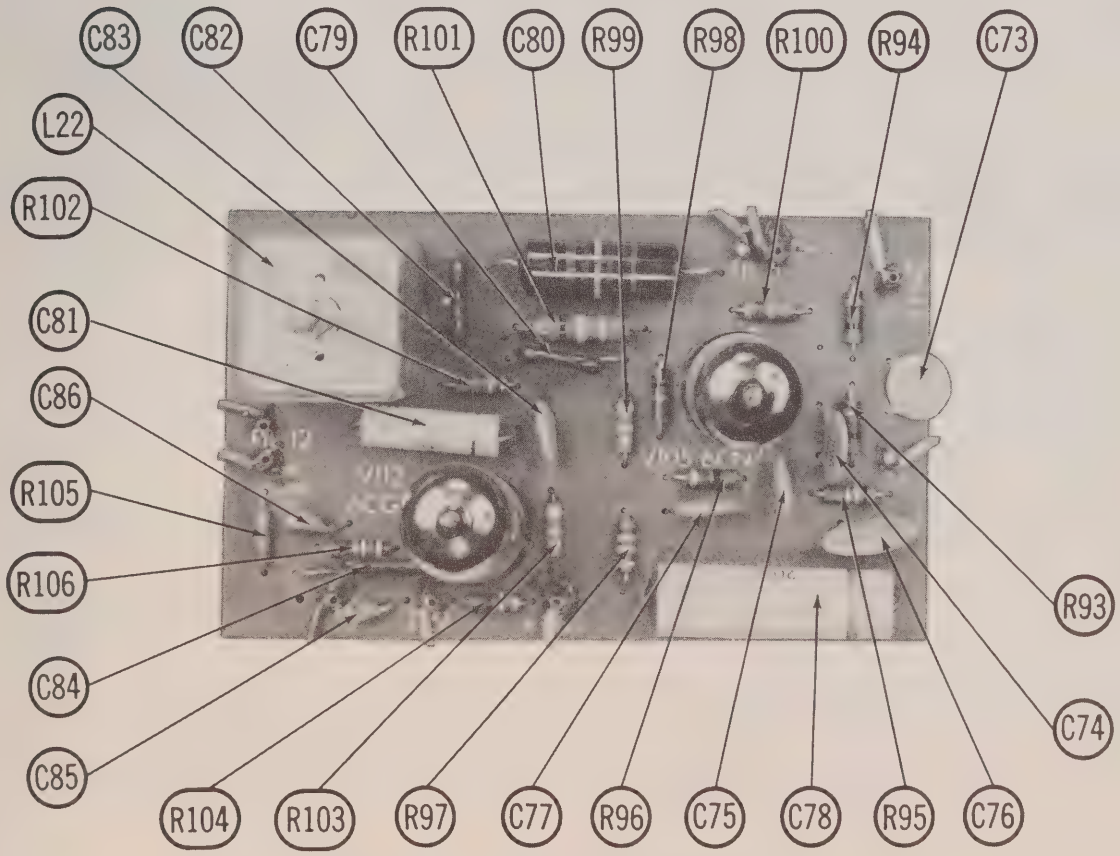
DENVER, COLORADO

HORIZONTAL PRINTED BOARD



VERTICAL PRINTED BOARD

SET 366 FOLDER 2

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Set fine tuning 90 degrees from full counter clockwise rotation.
Do not remove the horizontal oscillator tube to disable the high voltage.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Turn the AGC level control fully clockwise. Turn the contrast control fully counter clockwise. Turn picture guard control fully counter clockwise and area switch to normal. Connect a jumper across the antenna input terminals.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 3 volt bias supply to point (B). Positive to chassis.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to point (D). Low side to chassis.	44.15MC (Unmod)	Any non-intefering channel	DC probe to point (C). Common to chassis.	A1	Adjust for maximum deflection. Use first peak from bottom end of coil. Use only enough generator output to provide a usable pattern on VTVM.
2.	"	"	43.14MC	"	"	A2	"
3.	"	"	41.25MC	"	"	A3	Adjust for MINIMUM deflection. Use first null point from top end of coil. Repeat steps 2 and 3.
4.	"	"	45.1MC	"	"	A4	Adjust for maximum deflection. Use first peak from bottom end of coil. Use only enough generator output to provide a usable pattern on VTVM.
5.	"	"	47.25MC	"	"	A5	Adjust for MINIMUM deflection. Use first null point from top end of coil. Repeat steps 4 and 5.
6.	"	"	43.9MC	"	"	A6	Adjust for maximum deflection. Use first peak from bottom end of coil.
7.	"	"	39.75MC	"	"	A7	Adjust for MINIMUM deflection. Use first null point from top end of coil.
8.	"	"	47.25MC	"	"	A8	Adjust for MINIMUM deflection. Use first null point from top end of coil. Repeat steps 6, 7 and 8.
9.	"	High side to point E. Low side to chassis.	44.75MC	"	"	A9	Connect a 100Ω resistor and a 100MMF capacitor in series from pin 1 (grid) of 3BZ6 (V3) to chassis. Adjust A9 for maximum deflection. Remove the resistor and capacitor from V3.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to ungrounded tube shield floating over mixer-oscillator tube (V2). Low side to chassis.	44MC (10MC Swp)	39.75MC 41.25MC 42.75MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 68K to point (C). Low side to chassis.		Check for response similar to Fig. 1. If necessary, SLIGHTLY retouch A1, A2, A4, A6 and A9. Adjust A3 to place 41.25MC marker in trap notch. Repeat "Video IF Alignment" if it is impossible to get a response similar to Fig. 1.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Direct	High side to point (C). Low side to chassis.	Not used	4.5MC (400∿ Mod)	Any non-intefering channel	Vert. Amp. thru detector (Fig. 2) to pin 11 (cathode) of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING ON THE AIR SIGNAL

Turn the set on and tune in a STRONG TV signal. Set the buzz control (R9) 90 degrees from full clockwise rotation. Adjust A-11 for maximum volume. Reduce the signal strength into the receiver by inserting an attenuator in series with the antenna. If a suitable attenuator is not available, remove the antenna connection from the receiver and stray feed the signal into the receiver by placing the lead-in near the antenna terminals. Adjust A12 and A13 for maximum volume. Adjust R9 for MINIMUM noise. Reconnect antenna and readjust A-11 for maximum volume. If necessary, reduce volume so that this peak can be heard.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND SCOPE

Set the volume control at low level.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Direct	High side to point (C). Low side to chassis.	4.5MC (15KC Swp)	4.5MC (400∿Mod)	Any non-interfering channel	Across secondary of audio output transformer (T6).	A11	Set buzz control (R9) 90 degrees from full clockwise rotation. Adjust A11 for maximum 400∿ indication on scope.
13.	"	"	"	"	"	"	A12, A13	Reduce generator output so that signal is below limiting level of 3BN6 as evidenced by background hiss and noise. Adjust A12 and A13 for maximum 400∿ indication on scope.
14.	"	"	Not used	4.5MC (400∿ Mod)	"	"	R9	Use high generator output and adjust R9 for MINIMUM 400∿ indication on scope.
15.	"	"	4.5MC (15KC Swp)	4.5MC (400∿ Mod)	"	"	A11	With volume control set at low level, retouch A11 for maximum 400∿ on scope.

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 3. Video marker should fall at 40%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect bias as under "Video IF Alignment".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point Ⓔ. Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 4 with markers above 90%.
18.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 4. If markers fall below 70% on any channel, make compromise adjustments of A26, A27 and A28 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

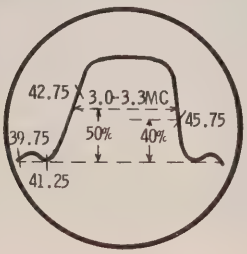


FIG. 1

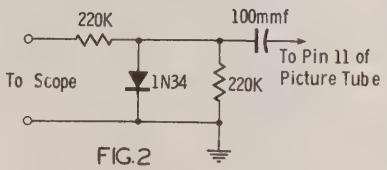


FIG. 2

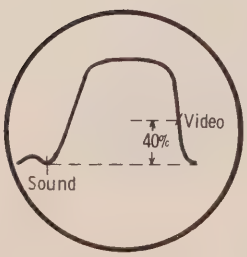


FIG. 3

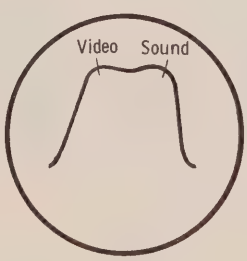
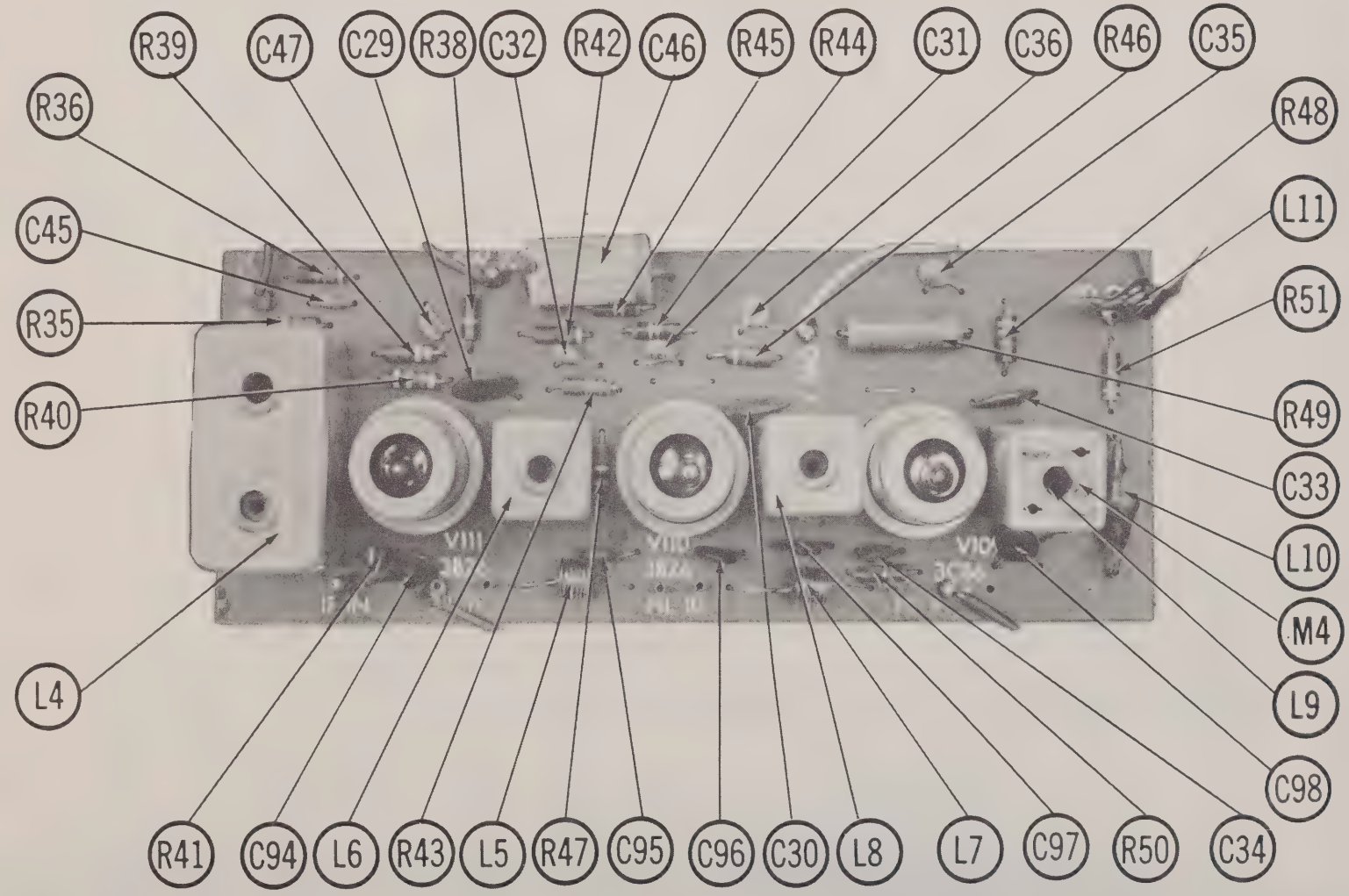


FIG. 4



VIDEO IF PRINTED BOARD

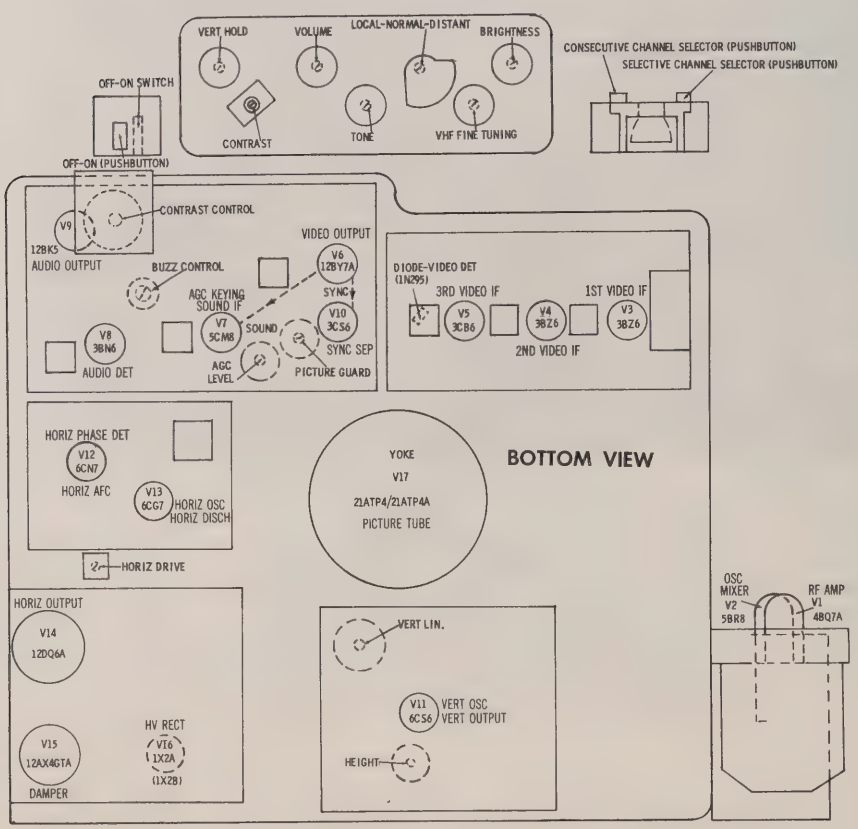
CHASSIS BOTTOM VIEW

CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)

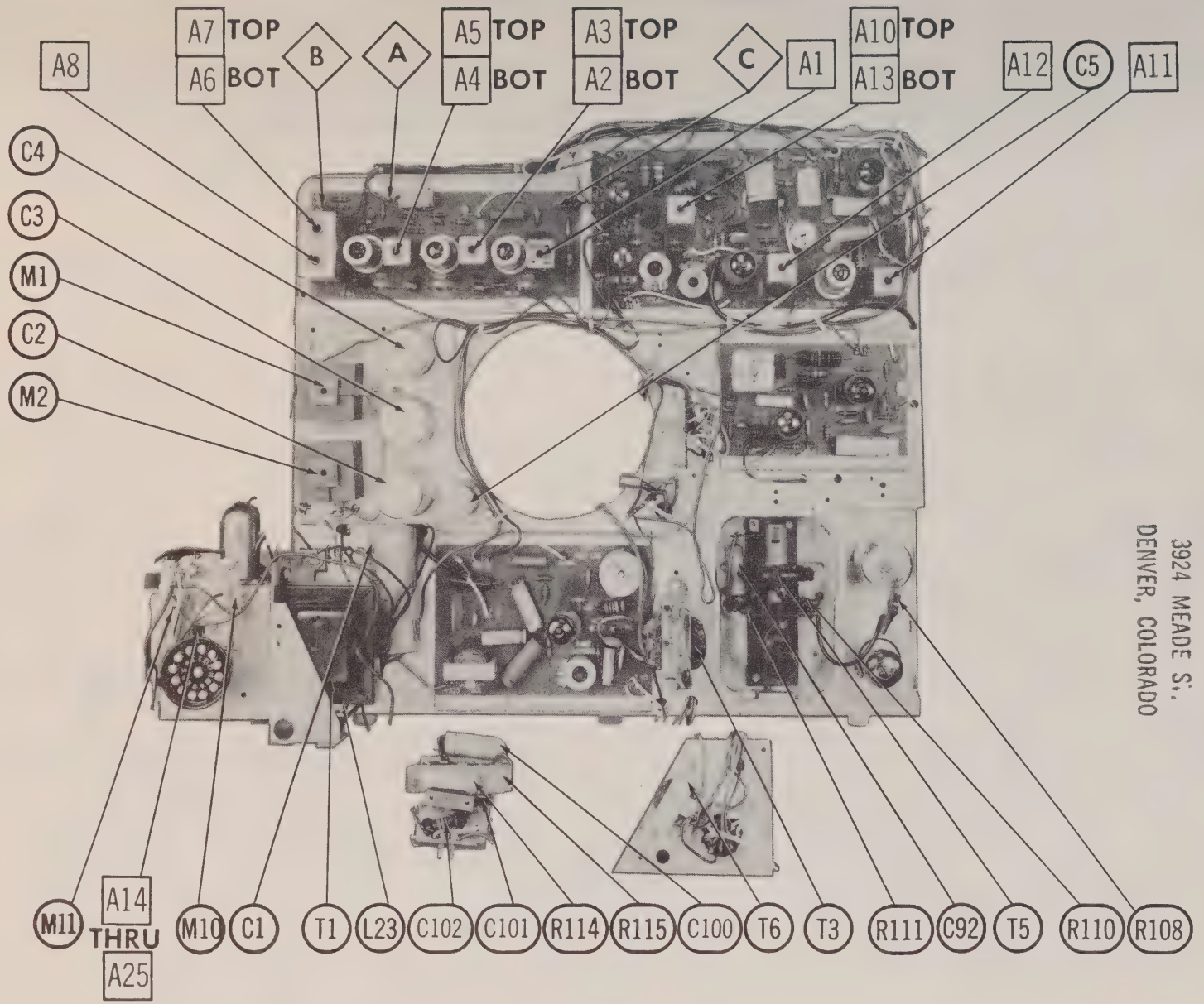
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BQ7A	†1000Ω	80K	INF	1Ω	2Ω	INF	3.3Meg	0Ω	0Ω
V2	5BR8	10K	†10K	0Ω	0Ω	1Ω	†14K	†38K	0Ω	226K
V3	3BZ6	700K	47Ω	7.5Ω	7Ω	▲ 470Ω	▲ 470Ω	0Ω		
V4	3BZ6	▲ 680Ω	▲ 27Ω	7Ω	6.5Ω	†530Ω	†530Ω	60K		
V5	3CB6	.1Ω	150Ω	6.5Ω	6Ω	†8700Ω	†8700Ω	0Ω		
V6	12BY7A	15Ω	3500Ω	0Ω	8.5Ω	8.5Ω	10.5Ω	†5500Ω	†17K	0Ω
V7	5CM8	680K	1.5Ω	120Ω	5.5Ω	4Ω	†12K	†12K	• 22K	12K
V8	3BN6	• 130Ω	1.5Ω	4Ω	3.5Ω	†8500Ω	220K	†330K		
V9	12BK5	†900Ω	TP	470K	10.5Ω	12.5Ω	1400Ω	470K	†500Ω	TP
V10	3CS6	16K	0Ω	6Ω	5.5Ω	40K	1400Ω	3.3Meg		
V11	6CS7	‡1310Ω	NC	2.2Meg	9.5Ω	8.5Ω	• ‡2.7Meg	• 330K	60Ω	6500Ω
V12	6CN7	0Ω	2Meg	1Meg	3.5Ω	3.5Ω	270Ω	2Meg	†47K	2Ω
V13	6CG7	†57Ω	32K	10K	7.5Ω	8.5Ω	†100K	47K	0Ω	0Ω
V14	12DQ6A	NC	13.5Ω	NC	†6800Ω	470K	TP	12.5Ω	0Ω	TOP CAP ‡46Ω
V15	12AX4GTA	NC	TP	¶	NC	†57Ω	TP	13.5Ω	15Ω	
V16	1X2A	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡470Ω
V17	21ATP4	60K	• 60K	PIN 6 ‡29Ω	PIN 10 ‡120K	PIN 11 100K	PIN 12 60K			

† MEASURED FROM OUTPUT OF M2.
‡ MEASURED FROM PIN 3 OF V15.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION
▲ MEASURED FROM PIN 7 OF V4.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
TP TIE POINT
NC NO CONNECTION.

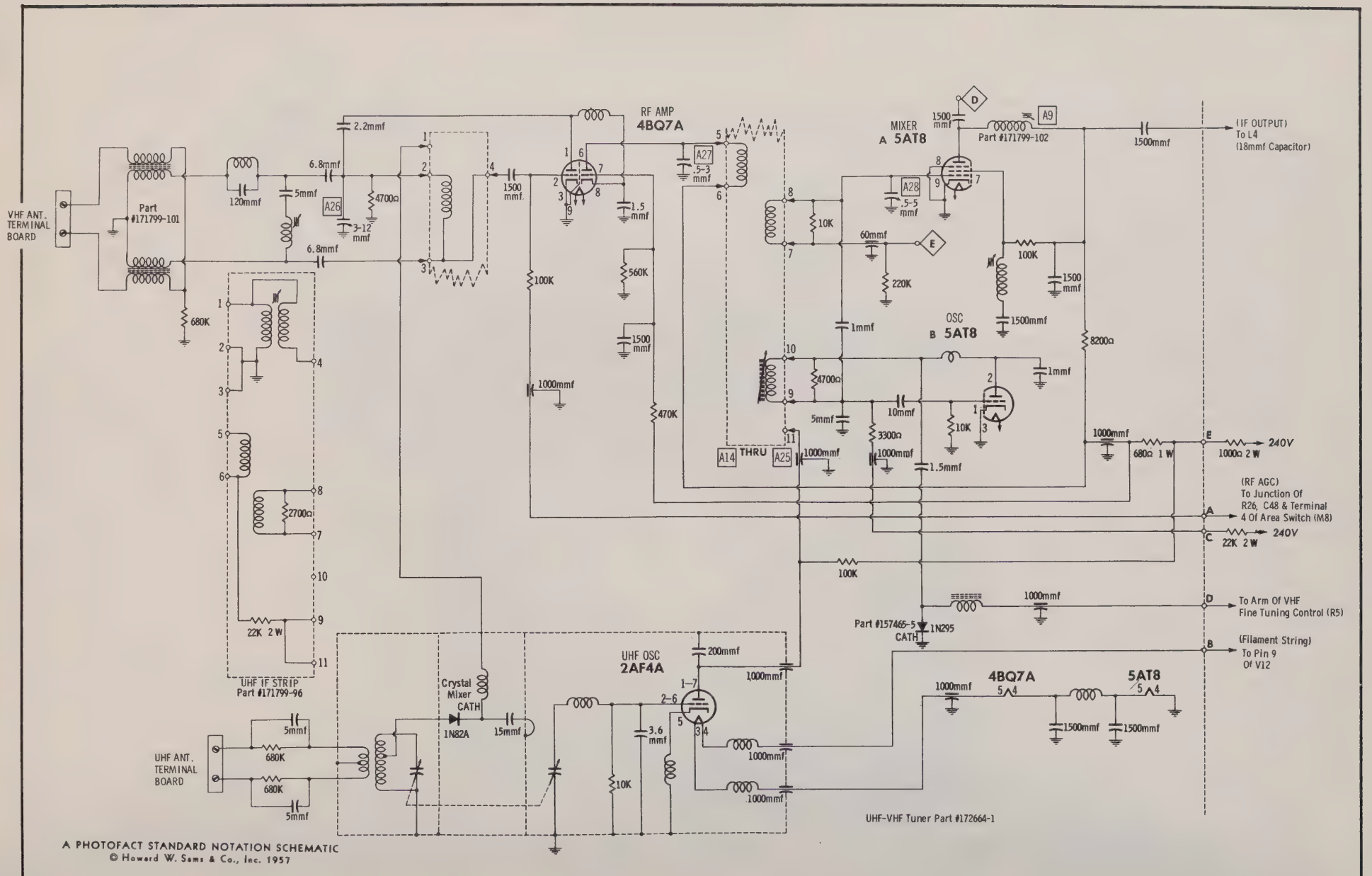


TUBE PLACEMENT CHART



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALTERNATE TUNER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	4BQ7A	
V2	Mixer-Osc.	5BR8	
V3	1st. Video IF Amp.	3BZ6	
V4	2nd. Video IF Amp.	3BZ6	
V5	3rd. Video IF Amp.	3CB6	
V6	Video Output	12BY7A	
V7	AGC Keying-Sound IF Amp.	5CM8	
V8	Audio Det.	3BN6	
V9	Audio Output	12BK5	

ITEM No.	USE	TYPE	NOTES
V10	Sync Sep.	3CS6	
V11	Vert. Osc. -Vert. Output	6CS7	
V12	Horiz. Phase Det. - Horiz. AFC	6CN7	
V13	Horiz. Osc. -Horiz. Disch.	6CG7	
V14	Horiz. Output	12DQ6A	
V15	Damper	12AX4GTA	
V16	HV Rectifier	1X2A	Note 1

Note 1. A 1X2B may be use in some versions.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	CROSLEY PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V17	21ATP4/ 21ATP4A	21ATP4A/ 21ATP4 ①	21ATP4/ 21ATP4A② 21ATP4A②	① Aluminized ② Silver screen "85"

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	200	172629-1	PR1-075	XA0318	FP126	TD-200-200	D-100	TVA-1408
C2	140	350	159902-1	AFHS1-43	BO354	FP140	TMS-48	S-230	TVL-1641
C3A	▲140	350	172026-1	AFH2-41-80	DO040	FP229.3 TC62		D-177 MT-4510	TVL-2643
B	▲10	350							
C4A	■10	350	172027-1	AFH3-30-60	DO040	FP333.8	TMQ-6	Q-200 MT-1580	TVL-3689
B	▲20	350							
C	▲80	150							
C5	80	150	172025-1	AFH1-20	XA0231	FP128	TMS-21	S-085	TVL-1420
C6	15	525	172226-1	PRS600V16	BRHV616	TC83	TD-16-600		TVA-1965

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	47			NP0-SI 47	TCZ-47	C10Q47C	TCO-47		5TCC-Q47	NP0
C8	8.2			NP0-SI 8.2		C10V82C	TCO-8.2			NP0
C9	2.2			NP0-SI 2.2	TCZ-2R2	CTA6V22C	TCO-2.2		5TCCB-V22	NP0
C10	800									
C11	3-8									
C12	800									
C13	.5-3				829-3		3115-D	CT565A		
C14	800									
C15	.5-3				829-3		3115-D	CT565A		
C16	60									
C17	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C18	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C19	800									
C20	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C21	1.0			NP0-SI 1.0	TCZ-1					
C22	10			BPD-00001	DD-100	L10T1	ED-10	UC-541	5GA-Q1	
C23	5			NP0-SI 5		L10V5	ED-5	ZT-555	5TCCB-V5	
C24	1.5			NP0-SI 1.5		C10V15C	TCO-1.5	ZT-5515		NP0
C25	1000			EF-001	MFT-1000				503C-D1	
C26	800									
C27	800									
C28	39		158215-101							N75 ①
C29	820		158215-53	1464-00082		L10T82	ED-820		MS-382	10%
C30	820		158215-53	1464-00082		L10T82	ED-820		MS-382	10%
C31	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C32	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C33	820		158215-53	1464-00082		L10T82	ED-820		MS-382	10%
C34	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C35	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C36	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C37	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C38	50000		158215-104							
C39	.2	150	172355-3			CUB2P1		GEM-202	2TM-P2	
C40	1000		158215-42	1464-001			ED-1000			10%
C41	.01	200	39478-24	BPD-01	DD-103		ED-01	GEM-211	2TM-S1	
C42	51		158215-96							N75 10%
C43	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C44	10000		158215-57	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C45	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C46	.1	150	172355-1	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C47	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C48	.1	150	172355-1	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C49	50000		158215-104							
C50	10000		158215-57	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C51	10000		158215-57	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C52	10000		158215-57	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C53A	10000		158215-50	BPD-2X01	DD3-103	BYD6DS1	ED-01	DC511	5HK-2S1	
B	10000						ED-01	DC511		
C54	.047	200	159505-7	BPD-05	DF-503	BC2S47J		ACE2147	2SE-S47	
C55	1000		144675-28	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C56	1000		158215-17	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C57	.022	200	39478-43	BPD-02	DF-203	CUB2S22	ED-02	GEM-2122	2TM-S22	
C58	.015	600	39001-14	BPD-01	DF-103	CUB6S15	ED-01	GEM-6115	6TM-S15	
C59	8200	1000	158215-107							10%
C60	.05	150	172355-2	BPD-05	DF-503	CUB2S5		GEM-215	2TM-P5	
C61	.0022	600	39478-37	BPD-0022	D6-222	CUB6D22	GP-2200	GEM-6222	6TM-D22	
C62	1500		158215-61	1464-0015		1R5D15			MS-215	10% ②
C63	27		158215-97	BPD-000027	D6-270	L10Q27	ED-27	UC-5427	5GA-Q27	
C64	5000		158215-25	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	VOLT	REPLACEMENT DATA CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C65	.047	200	394678-29	BPD-05	DF-503	CUBD47		GEM-2147	2TM-047	2, 10%
C66	560		394678-32	1484-00056	DS-561	LOT56	ED-560	MS-356	1TM-560	
C67	.033	200	394678-43	BPD-03	DF-303	CUBD333	ED-03	GEM-B333	2TM-033	
C68	.082	400	172686-1							10%
C69	.047	600	394678-28	BPD-05	DF-503	CUBD547	ED-01	GEM-6147	4TM-047	
C70	.01	600	394678-41	BPD-01	DD-103	CUBD61	ED-01	GEM-611	6TM-01	
C71	.0033	600	172686-2	BPD-0033	DS-332	CUBD633	GP-2300	GEM-6333	6TM-D33	
C72	4000		183215-67							
C73	91		183215-66							NTO 10%
C74	91		183215-99							NTO 10%
C75	1000		183215-43							
C76	3300		183215-51		1484-003		ED-1000		MS-31	10%
C77	1000		183215-43		1484-001				MS-31	10%
C78	.12	200	394678-14				ED-1000		MS-31	10%
C79	680		394678-33		1484-00068				MS-368	10%
C80	.1	200	394678-20		P368N-1	DF-104	CUBD31		GEM-30A	5TM-P1	
C81	.0015	600	394678-36							10%
C82	1300		137498-57		1484-0013				MS-313	10%
C83	1500		183215-63		1484-001				MS-315	10%
C84	680		137498-42		1484-00068		ED-1000		MS-368	10%
C85	220		183215-63		1469-00032				MS-322	10%
C86	330		183215-63		1469-00032				MS-322	10%
C87	100									
		600	159582-1							
C88	.15	400	390D1-20		P488N-15		CUBA215		GEM-4015	4TM-P15	
C89	5000		144675-3		BPD-005		BD-005		BYA005	S6K-D6	
C90	100	3000	183215-33								NTSO 10% ①
C91	1500		183215-51		1484-0015				MS-315	10%	
C92	.01	300	159582-1							10%	
C93	68	3000	183215-3								NO400 10%
C94	1500		144675-30		BPD-0015		BD-153		BYA10D15		
C95	1500		144675-30		BPD-0015		BD-153		BYA10D15		
C96	1500		144675-30		BPD-0015		BD-153		BYA10D15		
C97	1500		144675-30		BPD-0015		BD-153		BYA10D15		
C98	1500		144675-30		BPD-0015		BD-152		BYA10D15		
C98A	5000		183215-101		BPD-X3006		DDS-503		BYCED06		
B	5000										
C100	.1	600	394678-47		P488N-1		DF-104		CUBB31		
C101	.033	600	157994-5		BPD-03		DF-303		CUBD333		
C102	.0033	600	157994-3		BPD-0033		DS-332		CUBD633		
C103	5000				BPD-005		DD-502		BYA10D5		
C104	6000		144675-2		BPD-006		DD-503		BYA10D6		
C105	5000		144675-3		BPD-005		DD-503		BYA10D5		

ITEM No.	REPLACEMENT DATA CROSLEY PART No.	HALLDORSON PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIED PART No.
T1	172148-1					

* Ratings measured with transformer under load (Motor running, channels being selected).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	CROSLEY PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	RCA PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Osc.	172249-1	B6704 ①②	A-3006 ①②		V40B ①②	A-8135 ①②	26A03 ①②	A-972 ①②
T3	Vert. Output	156736-3	Z1007	A-3234		V31		26D76	A-12X
T4A	Vert. Sync. (32MH)	172686-1 ④	DF907 ⑤⑥	MDF-92 ⑤⑥	235D1 ⑤⑥	VP0719 ⑤⑥	DY-48A ⑤⑥	Y-41 ⑤⑥	A-12X
B	(90°) Vert. (40MH)			⑤⑥		43 ⑤⑥		NW9 ⑤⑥	
M12	Rear Cover And Centering Device	153586-1							
T5	Horiz. Output	172287-3 ⑦	FB463 ⑦ *	KVO-84 ⑦ +				F1Y-130 ⑦ +	Y-61 D-77 ⑦ *

① Drill new mounting hole(s)
② Connect green lead to junction of capacitors C65 and C67. Connect blue lead and black lead to ground.
③ Connect yellow lead to pin 8 of V1A and to output of vertical integrator network.
④ Connect green lead to junction of capacitors C66 and C67. Connect blue lead and yellow lead to ground. Connect red lead to pin 8 of V1A and to output of vertical integrator.
⑤ Includes resistors R85, R92 and capacitor C93. Does not include yoke rear cover and centering device.
⑥ Use original yoke damping network and original rear cover and centering device.
⑦ Jump yoke terminals 5 and 6.
⑧ Includes V16 tube socket.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
6	3	3				3	
4	2	2				2	
2	1	1				1	
1	6	6				6	
7	4	4				4	
5	5	5				5	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA CROSLEY PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T6	7500Ω	6-8¼ tap & 3-4Ω	172976-1	Z1003 ①			23D86 ②	S-38X ①	① Drill one new mounting hole. ② Tape center tap on primary winding.

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V C IMP	REPLACEMENT DATA CROSLEY PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	158762-6 ①②	12A5H	① Used in Models DC-10B, M, DC-11B, M, DC-12M,
	5 1/4"	PM	2-4Ω	170395-1 ②	5Z4L	DC-13M
	4"	PM	3-4Ω	158327-3 ③	4A07	② Used in Models DT-12B, M, DT-13B, M
	8"	PM	3-4Ω	172884-1 ④	8A3L	③ Used in Models DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N.
						④ Used in Models DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B DC-17B, DC-18N, DC-19N. DT-12B, M, DT-13B, M (Ch. 493, 494).

COILS (RF-IF)

ITEM No.	USE	CROSLEY PART No.	NOTES
L1	Ant. Trans.	171799-100	
L2A	Ant., RF, Mixer Grid & Osc. Coils		
A	"	171013-3	Channel 3
B	"	171013-3	Channel 3
C	"	171013-4	Channel 4
D	"	171013-5	Channel 5
E	"	171013-6	Channel 6
F	"	171013-7	Channel 7
G	"	171013-8	Channel 8

ITEM No.	USE	CROSLEY PART No.	NOTES
L2B	Ant., RF, Mixer Grid & Osc. Coils		
I	"	171013-9	Channel 9
J	"	171013-10	Channel 10
K	"	171013-11	Channel 11
L	"	171013-13	Channel 13
M	"	171013-14	Channel 14
L3	Mixer Plate Coil	171799-106	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA CROSLEY PART No.	IRC PART No.	NOTES
R12	680K			BTS-680K	
R13	47K		394674-45	BTS-47K	
R14	150K			BTS-150K	
R15	100K		394674-49	BTS-100K	
R16	6800Ω		394674-35	BTS-6800	
R17	220K		394674-53	BTS-220K	
R18	33K			BTS-33K	
R19	4700Ω		394674-33	BTS-4700	
R20	8200Ω			BTS-8300	
R21	10K		394674-37	BTS-10K	
R22	10K		394674-37	BTS-10K	
R23	33K			BTS-22K	
R24	1000Ω		394674-25	BTS-1000	Note 1
R25	5000Ω	5	158230-10	PWT-5000	Note 2
R26	47K		394674-37		
R27	2.2Meg		394674-59		
R28	220K		394674-53		
R29	15K		394674-39		
R30	560K		394674-58		
R31	3.3Meg		394674-75	BTS-3.3Meg	
R32	180K		394674-52	BTS-180K	
R33	22K	2	394674-217	BTS-22K	
R34	15K		394674-40	BTS-15K	
R35	220K		394674-53	BTS-220K	
R36	470K		394674-57	BTS-470K	
R37	100K		394674-49	BTS-100K	
R38	1.5Meg		394674-63		
R39	220K		394674-53		
R40	4700Ω		394674-33		
R41	47Ω		394674-9	BTS-47	
R42	470Ω		394674-21		
R43	680Ω		394674-23		
R44	120K		394674-50	BTS-120K	
R45	120K		394674-50	BTS-120K	
R46	470Ω		394674-3	BTS-470	
R47	27Ω		394674-6	BTS-27	

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA CROSLEY PART No.	IRC PART No.	NOTES
R48	470Ω		394674-31	BTS-470	
R49	8200Ω	2	170773-4	PW4-8200	
R50	150Ω		394674-15	BTS-150	
R51	3900Ω		394674-32	BTS-3900	
R53	15K		394674-39	BTS-15K	
R53	100K		394674-49	BTS-100K	
R54	100K		394674-49	BTS-100K	
R55	10Meg		394674-65	BTS-10Meg	
R56	3.3Meg		394674-75	BTS-3.3Meg	
R57	15Ω		394674-3	BTS-15	
R58	10K		394674-37	BTS-10K	
R59	4700Ω	2	394674-209	BTS-4700	
R60	3900Ω	1	394674-208	BTS-3900	
R61	1800Ω	1	394674-18	BTA-1800	
R62	680K		394674-59	BTS-680K	
R63	390K		394674-58	BTS-390K	
R64	120K		394674-50	BTS-120K	
R65	130K	1	394674-141	BTA-120K	
R66	100K		394674-49	BTS-100K	
R67	47K		394674-45	BTS-47K	
R68	15K	1	394674-127	BTA-15K	
R69	15K		394674-39	BTS-15K	
R70	3900Ω	1	394674-120	BTA-3900	
R71	180Ω		394674-14	BTS-180	
R72	1000Ω		394674-25	BTS-1000	
R73	1000Ω		394674-25	BTS-1000	
R74	220K		394674-53	BTS-220K	
R75	22K		394674-41	BTS-22K	
R76	470K		394674-57	BTS-470K	
R77	330K		394674-55	BTS-330K	
R78	220Ω		394674-17	BTS-220	
R79	1200Ω	1	394674-114	BTA-1200	
R80	180K		394674-52	BTS-180K	
R81	56K		394674-47	BTS-56K	
R82	82K		394674-48	BTS-82K	
R83	1Meg		394674-61	BTS-1Meg	

COILS (cont)

ITEM No.	USE	CROSLEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L4	1st. Video IF	172690-1				Includes 39.75MC and 47.25MC Trap
L5	Fil. Choke	172348-1	19-1000			1.1 Microhenries
L6	2nd. Video IF	172599-1				Includes 47.25MC Trap and 37K resistor
L7	Fil. Choke	172348-1	19-1000			1.1 Microhenries
L8	3rd. Video IF	172306-1				Includes 41.25MC Trap and 37K resistor
L9	4th. Video IF	172346-1				Includes resistor, choke and 39MMF Cap.
L10	Shunt Peaking Coil	172681-1	19-3160		6130	152 Microhenries
L11	Series Peaking Coil	172683-1	19-3080 *	TV-181 *	6177 *	93 Microhenries, wound on 68000 resistor
L12A	4.5MC Trap	172454-1				Includes 33MMF Cap.
B	1st. Sound IF					Includes 68MMF Cap.
L13	Series Peaking Coil	172679-1	19-3138 ▲	TV-182	6113 ▲	113 Microhenries, wound on 22K resistor
L14	Shunt Peaking Coil	172372-1	19-3250	TV-185	6130	275 Microhenries
L15	Shunt Peaking Coil	172678-1	19-3026	TV-180	6176	60 Microhenries
L16	Series Peaking Coil	172974-1	19-3190 ■	TV-184 ■	6180 ■	170 Microhenries, wound on 10K resistor
L17	Fil. Choke	172348-1	19-1000			1.1 Microhenries
L18	2nd. Sound IF	172457-1				Includes 68MMF Cap.
L19	1st. Sound IF	172683-1				Includes 15MF Cap.
L20	H.F Choke	180463-1	19-3093 ●	TV-181 ●	6177 ●	86 Microhenries, wound on 1000Ω resistor
L21	Fil. Choke	180974-1	19-1001		6804	1.5 Microhenries

* Parallel with 1000Ω resistor.
▲ Parallel with 8300Ω resistor
▲ Parallel with 22K resistor
■ Parallel with 10K resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	NOTES
L23	140Ω		172339-1		A-3006 ①		V40B ①	A-8135 ①	Tapped @ 85Ω

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D C RESISTANCE	INDUCTANCE @ CURRENT 1000 $\mathcal{V}_{rms}$	CROSLEY PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L22	270 A	87Ω	1.3 HY	185839-5	C503 ①	C-3996 ①	C-8336 ①	26C44 ①	C-32 ①

① Drill one new mounting hole

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CROSLEY PART No.	REPLACEMENT DATA
K1	Vert. Integrator	23K, 16.4K, 12000MMF	170303-1 ①	Aerovox PA-501 Centralab PC-104 Sprague 10SC12

① Alternate part #157812-1 used in early production

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	CROSLEY PART No.	FEDERAL PART No	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	.270A	185575-1 ①	1022A ①	1N1007 ②	RS3006L ①	83350 ①	350A ①	
M2	.270A	185575-2 ①	1022A ①	1N1007 ②	RS3008L ①	83350 ①	350A ①	

① Selenium type. ② Germanium type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	CROSLEY PART No.	CRS PART No.	SYLVANIA PART No.	NOTES
M3	1N295	157465-5	1N60	1N60	Fine Tuning Diode (Pigtail)
M4	1N295 *	157465-5	1N60	1N60	Video Det. (Pigtail)

* A CK706A may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M5	Dial Light	182540-1	Type #1855
M6	Tuner	172649-1	VHF, Used in Ch. 495
	Tuner	132664-1	UHF-VHF, Used in Ch. 494
M7	Switch	172671-1	On-Off (push type)
M8	Switch	172673-1	Area (Rotary, wafer type)
M9	Switch	172610-1	Tuning (Consecutive-selective)
M10	Switch	172741-1	Consecutive Channel Selector (Cam operated)
M11	Switch	172742-1	Selective Channel Selector (Screw actuated) Used in Ch. 493
	Switch	172786-1	Selective Channel Selector (Screw actuated) Used in Ch. 494
M12	Centering Device	153586-1	Includes rear yoke cover
M13	Ion Trap	153109-2	
M14	Motor	172683-1	Tuner Drive - Used in Ch. 495
	Motor	172353-1	Tuner Drive - Used in Ch. 494

CONTROLS

ITEM No.	RATING RESIST OHMS	WATTS	REPLACEMENT DATA CROSLEY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1	172689-1	BT-57	A47P3-500K	Q33-133X	UT-430	Volume - Tap @ 150K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	800K	1	171717-1	B-69 *	A47-1Meg-S*	Q1-138 *	U54 *	Vert. Hold with 150K stop
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3	1K	2	172712-1	AB-743	A47-1.5Meg-S	Q1-138	R136A1-U-186	Contrast - wire wound Tone
R4A	1.5Meg	1	172724-1					
B	Shaft			AK-3	FS-3	Not Req.	Not Req.	
R5A	50K	1	172725-1	B-35	A47-50K-Z	Q33-123	U33	VHF Fine Tuning
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6	5Meg	1	171716-1					Brightness
R7	2500Ω	3	172275-1	WW-353				Vert. Lin.
R8	5Meg	1	172255-1					Height
R9	500Ω	1	172171-1					Buzz - wire wound
R10	40K	1	172235-1					AGC Level
R11	5Meg	1	172235-1					Picture Guard

* Use 150K resistor in series with left hand terminal.

PARTS LIST

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	159054-9	Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-12M, DC-13M
Safety Glass	159054-10	Models DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N
Mask	172642-1	Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-12M, DC-13M
Mask	172756-1	Models DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N
Knob	172670-1	Control (Mahogany) (6 used) Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M
Knob	172670-2	Control (Blonde) (6 used) Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-16B, DC-17B
Knob	172670-3	Control (Brown) (6 used) Models DC-18N, DC-19N
Knob	172670-4	Area (Mahogany) Models DT-12B, M, DT-13B, M, DC-10B, M, DT-11B, M, DC-12M, DC-13M, DC-14M, DC-15M
Knob	172670-5	Area (Blonde) Models DT-12B, M, DT-13B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-16B, DC-17B
Knob	172670-6	Area (Brown) Models DC-18N, DC-19N
Knob	172665-1	UHF Tuning (Mahogany) Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M
Knob	172665-2	UHF Tuning (Blonde) Models DT-12B, M, DT-13B, M, DC-10B, M, DC-11B, M, DC-16B, DC-17B
Knob	172665-3	UHF Tuning (Brown) Models DC-18N, DC-19N
Cabinet	172597-1	Models DT-12M, DT-13M
Cabinet	172597-2	Models DT-12B, DT-13B
Cabinet	172615-1	Models DC-10M, DC-11M
Cabinet	172615-2	Models DC-10B, DC-11B
Cabinet	172721-1	Models DC-12M, DC-13M
Cabinet	172716-1	Models DC-14M, DC-15M
Cabinet	172767-1	Models DC-16B, DC-17B
Cabinet	172766-1	Models DC-18N, DC-19N

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For adjustment of the VHF oscillator, set the fine tuning 90 degrees from fully counter clockwise. The adjustments may be made one at a time as the channel selector is rotated. Adjust for best picture and sound. The adjustments are accessible on Chassis 493 thru a hole in the rear of the cabinet and on Chassis 494 thru a hole in the bottom of the cabinet directly behind the channel indicator assembly.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws and the name plate at the bottom edge of the safety glass. Pull glass out at the bottom and slide down to remove.

SPECIAL ADJUSTMENTS

A. AGC Level Control Adjustment

Set the contrast control and the area switch for normal picture. Connect the high side of the scope to point ⟨C⟩. Low side to chassis. Turn the picture guard control fully counter clockwise. Adjust the AGC level control for 3 volts peak to peak on the scope.

B. Automatic Tuning - Adjustment of Cam And Switches

The cam should be positioned along the length of the tuner or motor shaft so that the roller of M11 rides on the cam with no interference from the red fiber disc, and so that the roller of M10 rides on the ends of the pre-selection screws with no interference from the cam. The spacing between the roller of M11 and the fiber disc should be at least 1/64".

Set the tuner to channel 13. Back out the pre-selection screw for channel 13 approximately 1/4" from full tight; screw the pre-selective screw for channels 12 and 2 down tight. (On chassis 493 the tuner is set to channel 13 when the flat on the VHF shaft is parallel to the top surface of the tuner. On chassis 494 the tuner is set to channel 13 when the red dot on the VHF tuning shaft is toward the tube side of the tuner.) Loosen the cam set screws and position the cam so that the M10 roller drops into place between screws 12 and 2. If necessary, readjust the cam so that the roller of M11 rests at the bottom of one of the depressions on the cam. Retighten the cam set screws.

The adjustment of M11 contact spacing should be made with power disconnected and with the tuner set to any channel. Loosen the fillister head locking screw to the point where it holds the switches M10 and M11 in place, but still allows adjustment by means of screws. After loosening the lock nut on M11 adjustment screw adjust the contact spacing to .015" (equivalent to the thickness of five sheets of newspaper.) The switch roller should be resting centrally in a depression of the cam. If it is not, reposition the cam as described in paragraph 2, adjust contacts, and then retighten lock nut. Check to see that gap is constant on all channels.

For M10 two adjustments are required. First unscrew the adjusting screw above M10 so that the switch roller does not touch the pre-selection screws. The proper contact gap is 1/32" (or .030") and may be adjusted by SLIGHTLY bending the switch blades. (The gap is not very critical and may be considerably smaller without impairing operation).

Set the tuner to a channel where the pre-selection screw is screwed down tight. Turn the switch adjusting screw down until the switch is closed, and then add an additional 1/2 turn. Rotate the tuner thru all positions, and be sure that the switch is closed on all channels where the pre-selection screw is screwed down tight. The switch may open between channels if it does not prevent proper operation.

Retighten the switch mounting screw.

Turn on the set and check for normal position. Preset channels for SELECTIVE tuning by backing out the pre-selection screw approximately 1/4". Pre-selection screws for all other channels should be turned down tight. Firmly press the tuner bar for CONSECUTIVE tuning, and release immediately. If M11 is adjusted correctly, the tuner will be rotated to the next consecutive channel. Repeat this check for CONSECUTIVE tuning for every position on the tuner drum. Press the tuner bar for SELECTIVE tuning, and release immediately. The tuner will be rotated to the next pre-selected channel. Repeat this check for all pre-selected channels.

C. Focus

The focus may be varied in steps by the position of a plug in the focus adjustment board. Readjust the ion trap for the best focus consistent with maximum brightness.

D. Picture Guard Adjustment

The picture guard control is provided to improve the picture stability in the presence of electrical noise. To adjust, turn the control fully counter clockwise and then clockwise only to the point of best picture stability. If the picture guard control is adjusted on a signal of one strength, it may be necessary to readjust for a signal of different strength or if the area switch is changed. For this reason, it should be adjusted on the strongest signal received. If the control is set too high, it may result in poor sync stability, bending in the picture or buzz in the sound.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

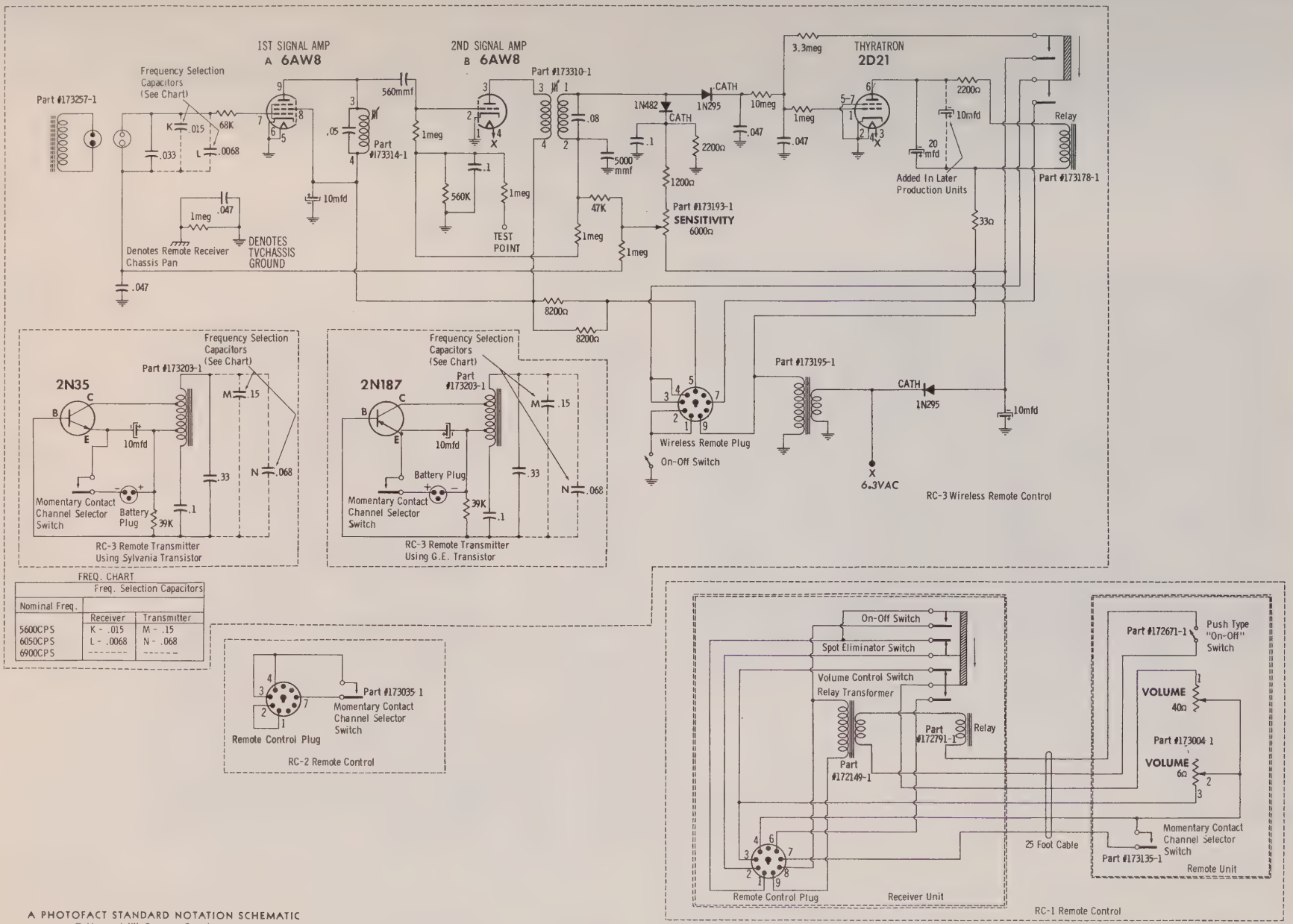
To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSES

A 7.5Ω fusible resistor (R114) is used for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting the two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.



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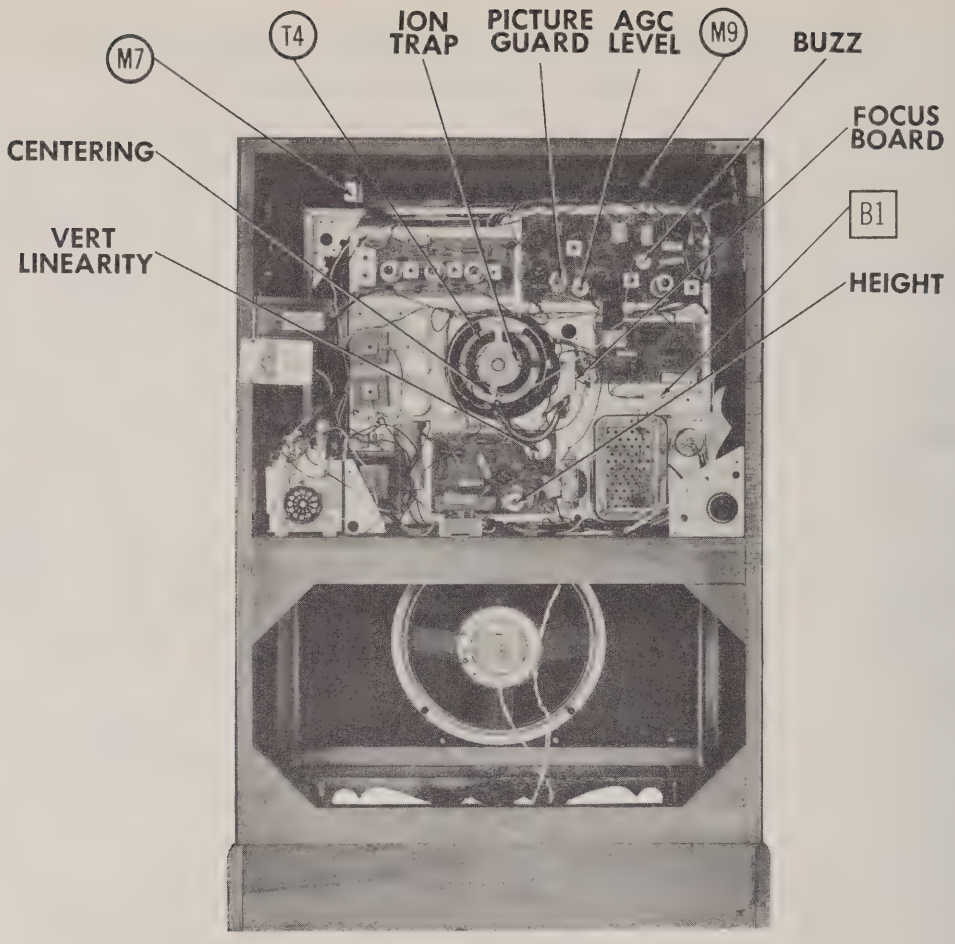
REMOTE CONTROL CIRCUITS SCHEMATIC

CROSLEY MODELS DC-10B, M, DC-11B, M, DC-12M, DC-13M, DC-14M, DC-15M, DC-16B, DC-17B, DC-18N, DC-19N, DT-12B, M, DT-13B, M (Ch. 493, 494)



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.

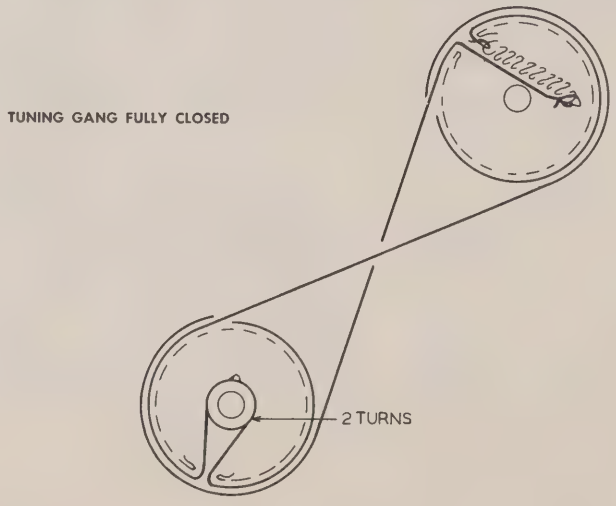
2. Set the brightness and contrast controls for a normal picture.

3. Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

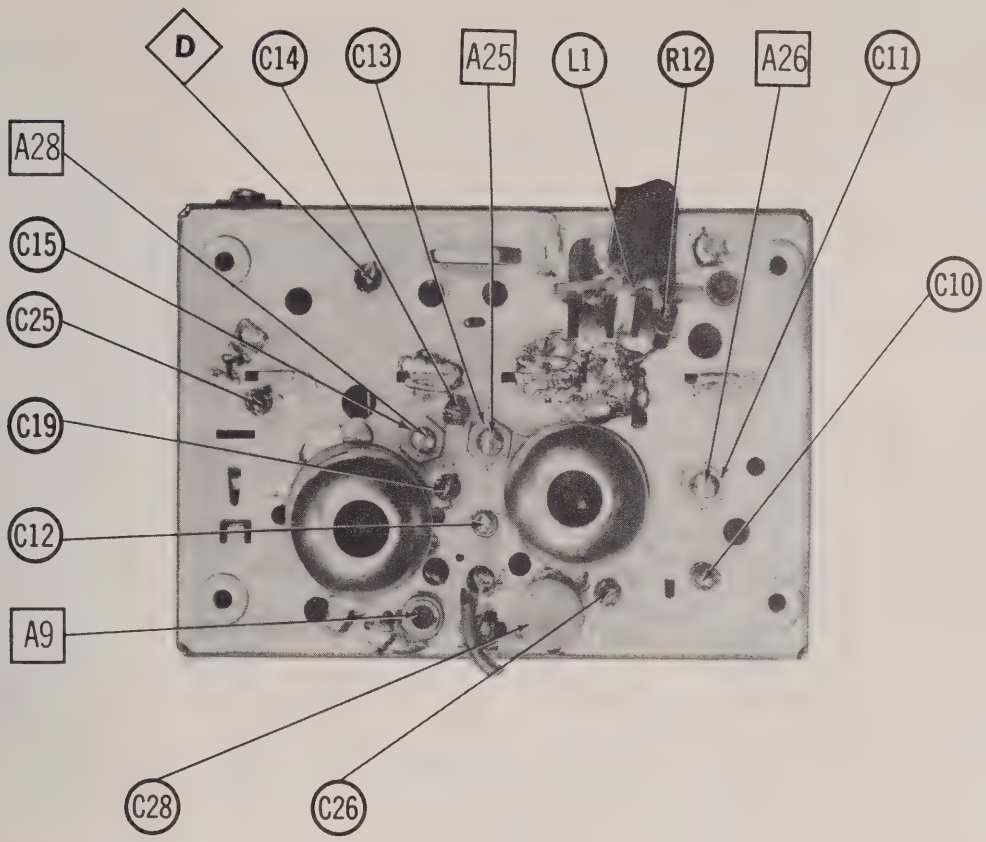
4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.

5. Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the horizontal drive trimmer (B1) until white lines disappear.

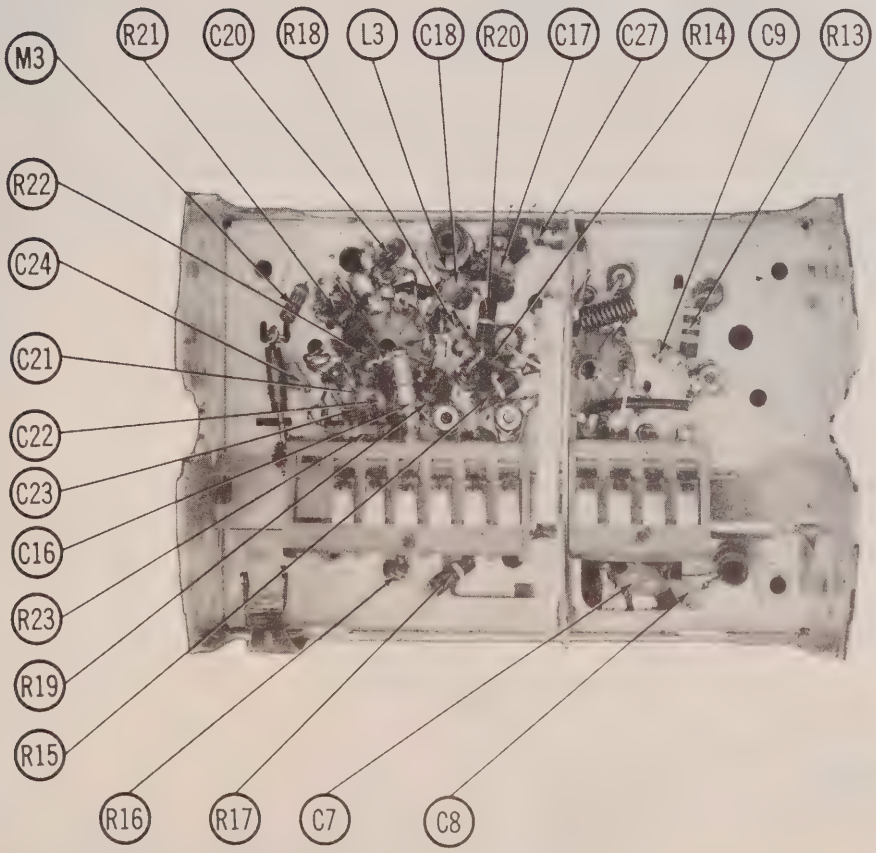
6. If in step 5 the horizontal drive was adjusted, tune in a TV station and repeat steps 3 and 4. Check horizontal sync by switching off channel and back again.



UHF DRIVE CORD STRINGING



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

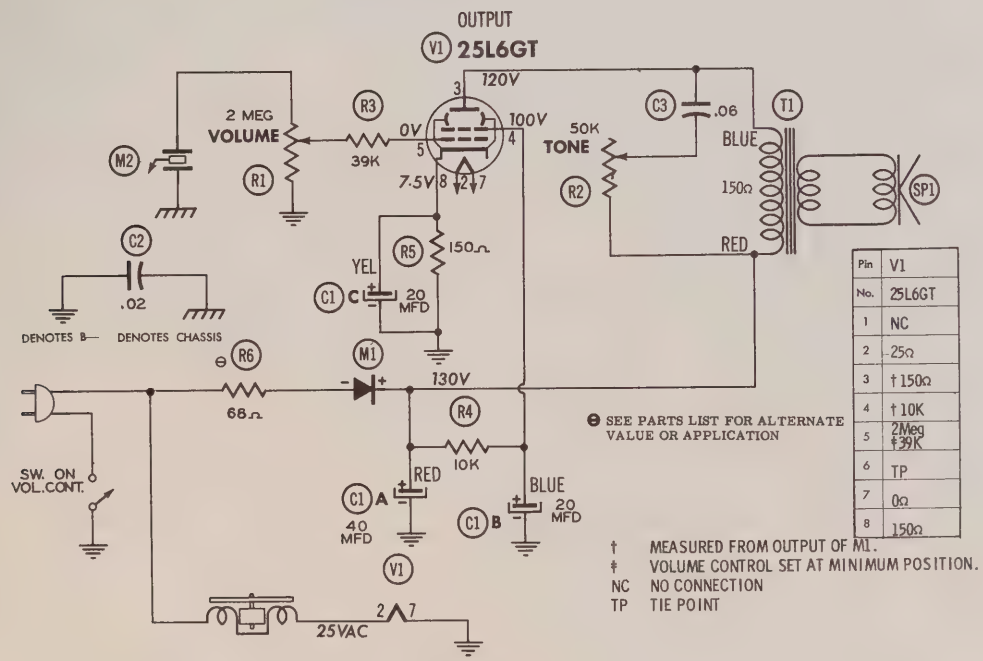
FIRESTONE
MODEL 4-A-144 (Codes 389-5-155, 389-6-155A)

FIRESTONE
MODEL 4-A-144 (Codes 389-5-155, 389-6-155A)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

FIRESTONE
MODEL 4-A-144 (Codes 389-5-155, 389-6-155A)

TRADE NAME	Firestone Model 4-A-144 (Codes 389-5-155, 389-6-155A)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	105-125 Volts AC - 60 Cycles RATING .34 Amp. @ 117 Volts AC



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

Pin No.	V1 25L6GT
1	NC
2	25Ω
3	†150Ω
4	†10K
5	2Meg ‡39K
6	TP
7	0Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1.
‡ VOLUME CONTROL SET AT MINIMUM POSITION.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	11747 ①	PRS150/25V	BBRT4215C		TML-2	FMT-321	TVA-3423
B	20	150		4020/20					
C	20	25							

① Part #12144 used in Code 389-6-155A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.02	200	11508	BPD-02	DD-203	CUB2S2	817-02	PT412	2TM-S2	
C3	.06	200	11509	P288N-06		CUB6S6		PT616	6TM-S6	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	11748	AB-76	A47-2Meg-Z	Q13-139	U-55	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	50K	½	11749	AB-32	A47-50K-Z	Q13-123	U33	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	NOTES
R3	39K		9144	BTS-39K	
R4	10K		9273	BTS-10K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	NOTES
R5	150Ω		9897	BTS-150	
R6	68Ω 5%			BTS-68 5%	Note 1

Note 1: Some versions use a 56Ω resistor in this application (Part #11744)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.3K	3.2Ω	Part of spkr. 11752	Z1101	A-3025	A-3332	26S58 ①	Z1101	① Drill one new mtg. hole.

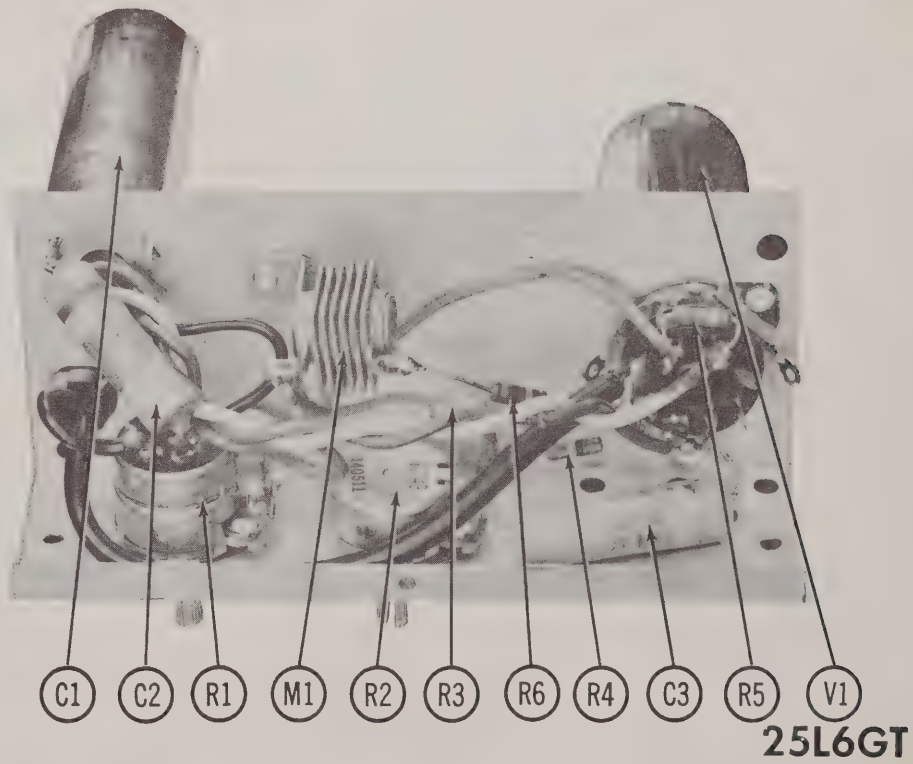
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.2Ω	11752	4A07	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA FIRESTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.051A	11756	1263A	RS065	6S65	8J1	65	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA FIRESTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	11767	30	♦N4-2J	51-2 *2400	PFT-1	*Complete arm & cartridge ass'y. ♦ Not supplied with cart.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA FIRESTONE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	10682	*J-752 or §NY-252 or ♦NY-252D		* Metal † Jewel ♦ Diamond §Nylon

PHOTOFACT* Folder
*TRADE MARK

HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)

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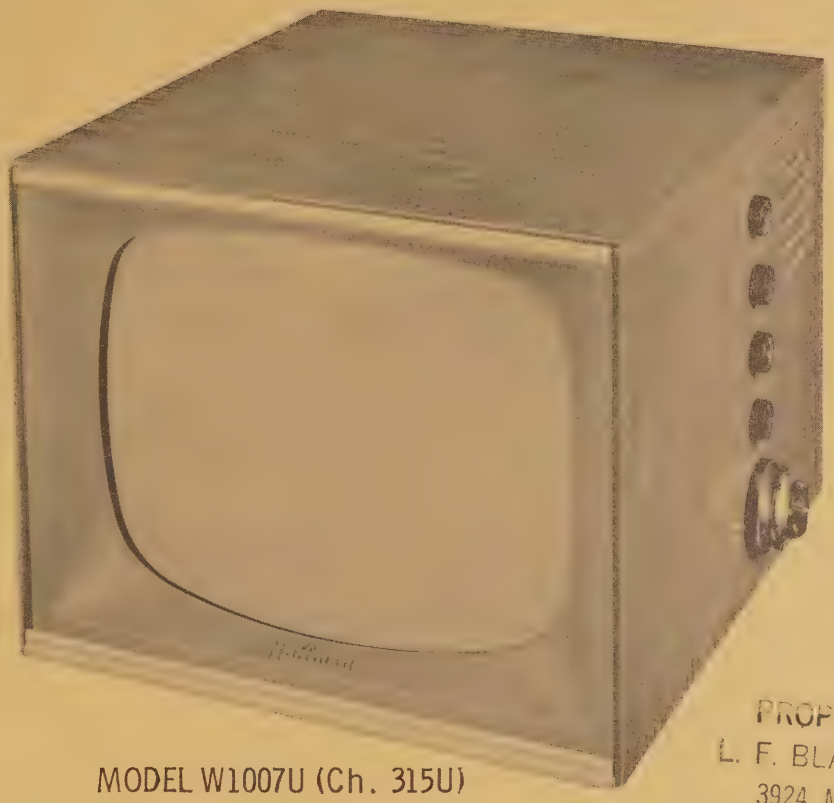
The contents for this envelope will be found among the last folders in this complete set of folders . . . unless it has been purchased as part of a complete volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL W1007U (Ch. 315U)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRADE NAME	Hoffman	MODELS	CHASSIS
		B1007, M1007, P1007, W1007	315
		B1007U, M1007U, P1007U, W1007U	315U
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.		
TYPE SET	Television Receiver		
TUBES	Twenty-one		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING 165 Watts, 1.3 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)

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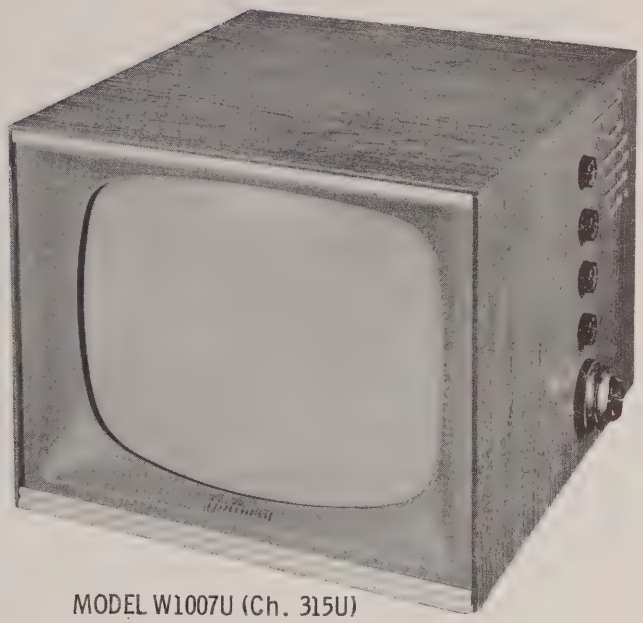
HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from the side.
2. Remove 4 wood screws, 1 metal screw and the rear cover.
3. Remove 2 speaker leads.
4. Remove 2 wood screws holding the bottom cabinet braces to the bottom.
5. Remove 6 bolts from the bottom holding the cabinet.
6. Remove the cabinet.
7. Remove 2 speaker nuts and the speaker.



MODEL W1007U (Ch. 315U)

MODELS	CHASSIS
B1007, M1007, P1007, W1007	315
B1007U, M1007U, P1007U, W1007U ..	315U

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding the metal trim across the bottom edge of the cabinet. Remove the safety glass.

FOCUS

Adjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A3) located on top of chassis.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)

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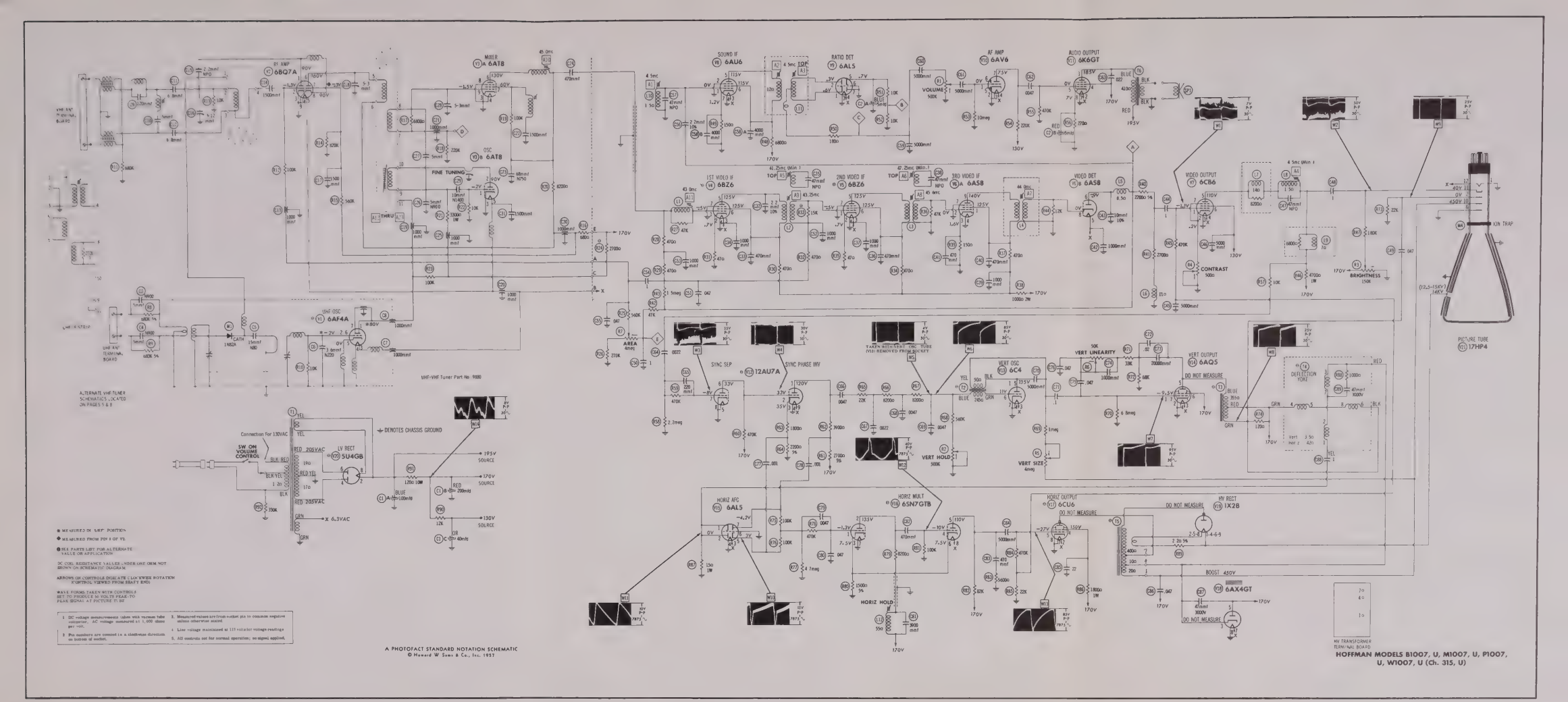
HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)
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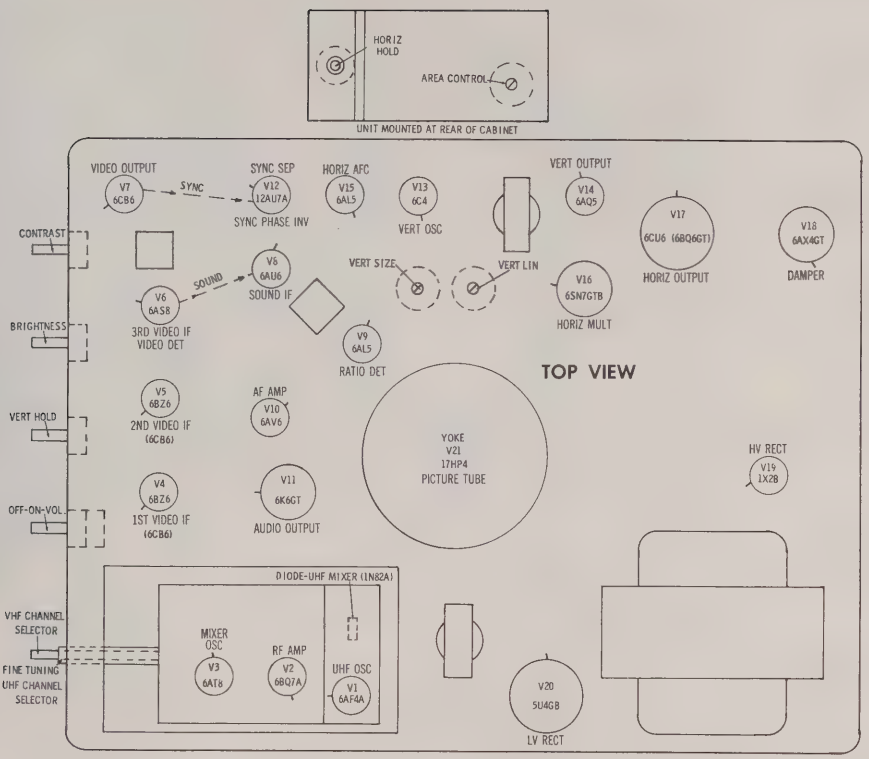
R1 AMP V7 6BQ7A
MIXER V1A 6AT8
OSC V1B 6AT8
SOUND IF V9 6AU6
RATIO DET V9 6AL5
AF AMP V10 6AV6
AUDIO OUTPUT V11 6K6GT
1ST VIDEO IF V4 6BZ6
2ND VIDEO IF V5 6BZ6
3RD VIDEO IF V6A 6AS8
VIDEO DET V6B 6AS8
VIDEO OUTPUT V7 6CB6
UHF OSC V1 6AF4A
SYNC SEP V12 12AU7A
SYNC PHASE INV
VERT OSC V13 6C4
VERT OUTPUT V14 6AQ5
HORIZ AFC V15 6AL5
HORIZ MULT V16 6SN7GTB
HORIZ OUTPUT V17 6CU6
HV RECT V19 1X2B
LV RECT V20 5U4GB
BOOST V18 6AX4GT
PICTURE TUBE V21 17HP4
ION TRAP
VOLUME 500K
FINE TUNING
THRU
AREA
CONTRAST 500K
BRIGHTNESS 150K
VERT LINEARITY
VERT SIZE
VERT HOLD 500K
HORIZ HOLD
DEFLECTION YOKE
DO NOT MEASURE
TAKEN WITH VERT. OSC. TUBE (V13) REMOVED FROM SOCKET
UHF-VHF Tuner Part No. 9880
ALTERNATE VHF TUNER SCHEMATICS LOCATED ON PAGES 5 & 8
SW ON VOLUME CONTROL
Connection For 130VAC
DENOTES CHASSIS GROUND
195V SOURCE
170V SOURCE
130V SOURCE
6.3VAC
HV TRANSFORMER TERMINAL BOARD
UHF ANT. TERMINAL BOARD
VHF ANT. TERMINAL BOARD
● MEASURED IN 'UHF' POSITION
● MEASURED FROM PIN 8 OF V2.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS OR CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as indicated.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.

TUBE PLACEMENT CHART



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TUBE FAILURE CHECK CHART

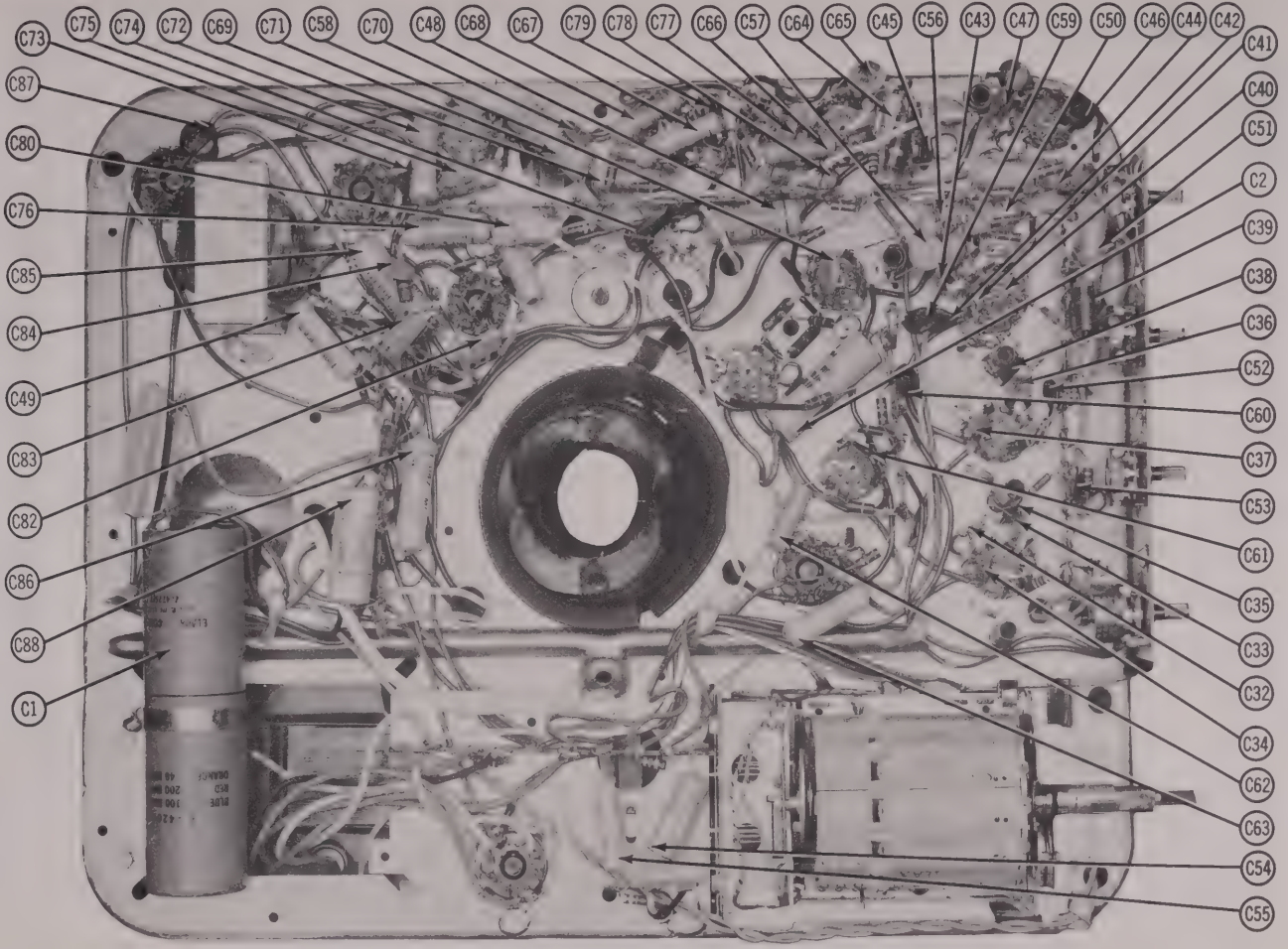
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6**
No pic, no sound, has snow - **V2, V3, (V1 UHF only)**
No pic, has sound, has raster - **V7, V21**
Has pic, no sound - **V8, V9, V10, V11**

SYNC FAILURE
No vert. sync - **V12**
No horiz. sync - **V12, V15**
No vert. or horiz. sync - **V12**

SWEEP FAILURE
No raster, has sound - **V15, V16, V17, V18, V19, V21**
No vertical deflection - **V13, V14**
Poor vert. linearity or foldover - **V13, V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V20**
Vert. off freq. - **V13**
Horiz. off freq. - **V16**



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Do not remove the horizontal oscillator tube (V16) to disable the high voltage circuit.
The high voltage lead should be securely taped and kept away from the chassis.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point Ⓑ. Common to chassis.	A1, A2	Use only enough generator output to provide a usable indication on VTVM.
2.	"	"	"	"	DC probe thru 10K to point Ⓒ. Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Turn contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to pin 11 (cathode) of picture tube thru detector (Fig. 1). Common to chassis.	A4	Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

Turn the contrast control fully clockwise.
Connect the negative lead of a 3 volt bias supply to point Ⓔ. Positive to chassis.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	High side to point Ⓓ. Low side to chassis.	41.25MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point Ⓐ. Common to chassis.	A5	Adjust for MINIMUM deflection.
5.	"	"	47.25MC	"	"	A6	"
6.	"	"	44.0MC	"	"	A7	Adjust for maximum deflection.
7.	"	"	45.6MC	"	"	A8	"
8.	"	"	43.25MC	"	"	A9	"
9.	"	"	43.0MC	"	"	A10	Adjust for MINIMUM deflection.
10.	"	"	43.0MC	"	"	A11	Adjust for maximum deflection.
11.	"	"	45.0MC	"	"	A10	"

OVERALL VIDEO IF RESPONSE CHECK

Connect a .001MFD capacitor across the vertical input terminals of the scope.
Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Direct	High side to point Ⓓ. Low side to chassis.	43.5MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓐ. Low side to chassis.		Check for response curve similar to Fig. 2 with markers as indicated. If curve falls within specified limits do not readjust If it does not, make SLIGHT readjustments to obtain desired response.

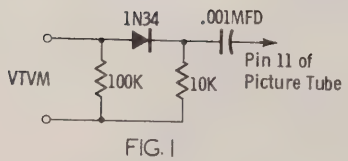


FIG. 1

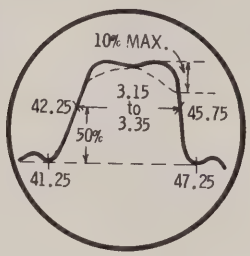


FIG. 2

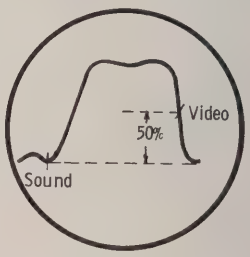


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
The channel oscillator adjustment screws are reached thru a hole in the front of the tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

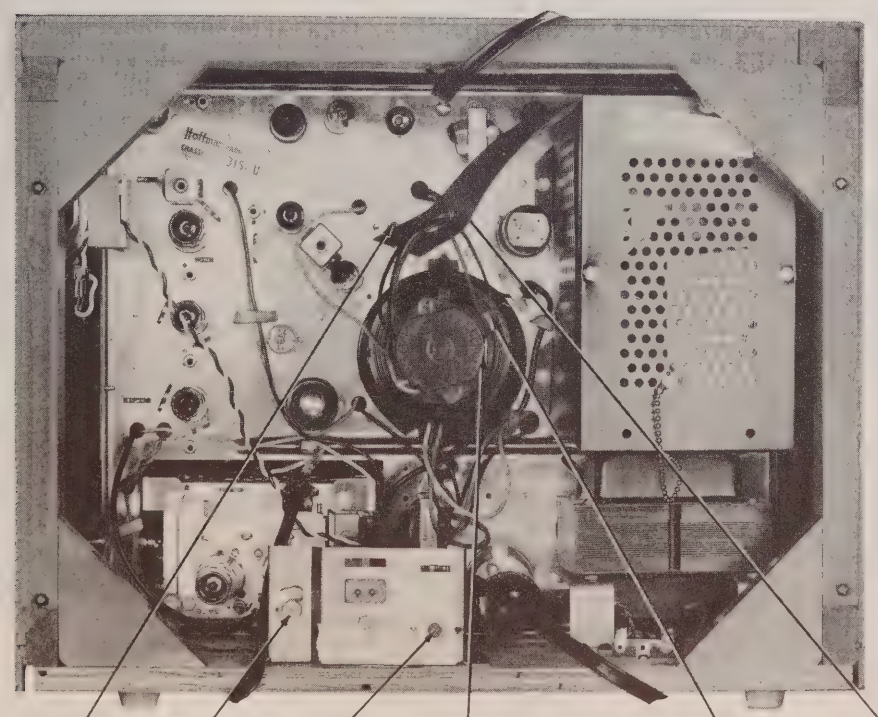
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point (A). Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 3. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

UHF TUNER AND VHF RF AND MIXER ALIGNMENT

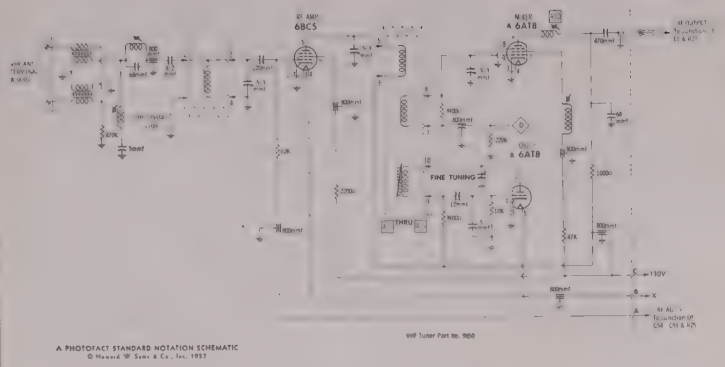
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.
2. Set the brightness and contrast controls for a normal picture.
3. Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.
4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.



CABINET—REAR VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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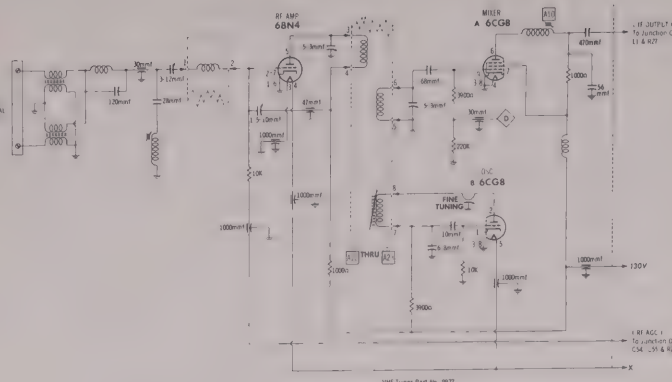
ALTERNATE TUNER SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALTERNATE TUNER SCHEMATIC

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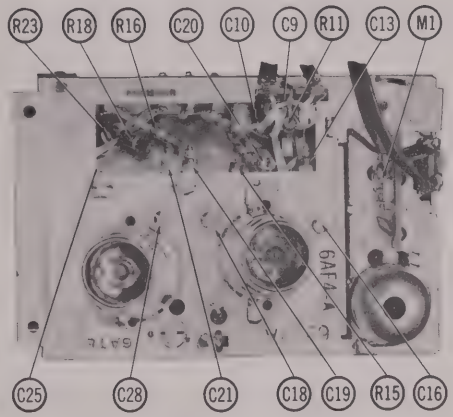
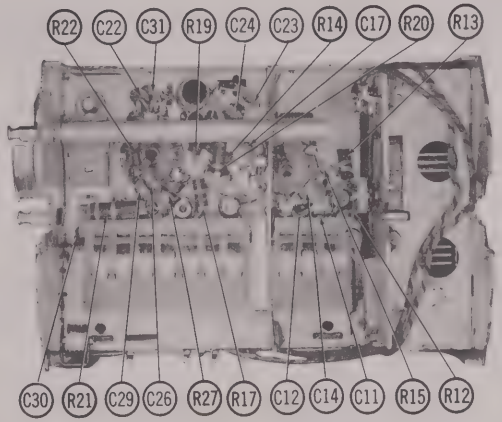
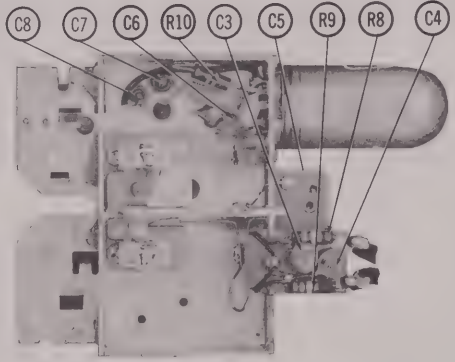


RF TUNER - TOP VIEW



RF TUNER - BOTTOM VIEW



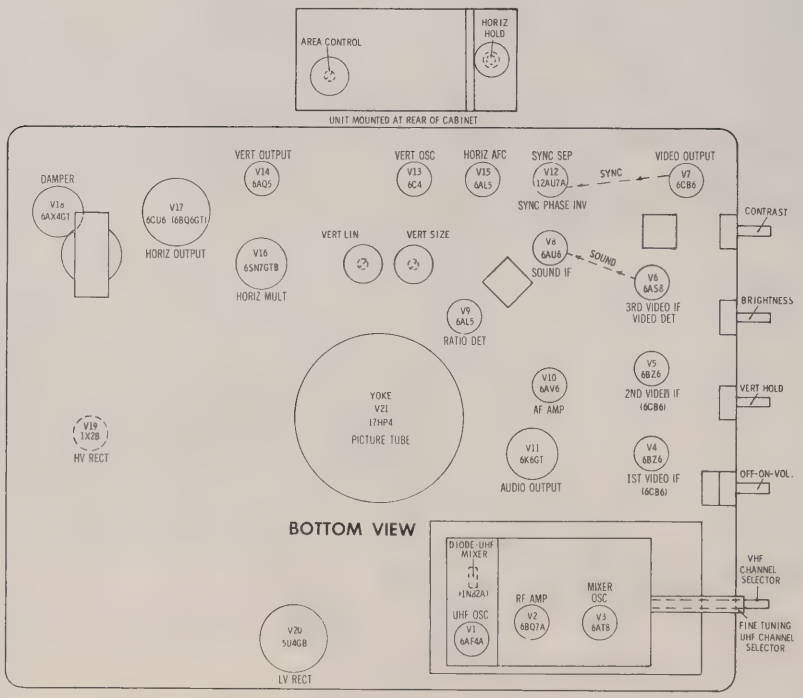
UHF TUNER - SIDE VIEW

SET 366 FOLDER 4

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4A	† *6000Ω	10K	.1Ω	.1Ω	.1Ω	10K	† *6000Ω		
V2	6BQ7A	INF	750K	0Ω	0Ω	.1Ω	† 800Ω	330K	INF	0Ω
V3	6AT8	10K	† 6000Ω	0Ω	0Ω	.1Ω	† 9000Ω	† 110K	0Ω	220K
V4	6BZ6	1.5Meg	47Ω	.1Ω	0Ω	† 1600Ω	† 1600Ω	0Ω		
V5	6BZ6	1.5Meg	47Ω	.1Ω	0Ω	† 1600Ω	† 1600Ω	0Ω		
V6	6AS8	† 1600Ω	.1Ω	150Ω	0Ω	.1Ω	4900Ω	0Ω	.1Ω	† 1600Ω
V7	6CB6	490K	•70Ω	0Ω	.1Ω	† 4800Ω	† 12K	•70Ω		
V8	6AU6	1.5Ω	0Ω	.1Ω	0Ω	† 6900Ω	† 6900Ω	150Ω		
V9	6AL5	INF	INF	0Ω	.1Ω	20K	0Ω	0Ω		
V10	6AV6	10Meg	0Ω	0Ω	.1Ω	NC	NC	† 230K		
V11	6K6GT	TP	.1Ω	† 410Ω	† 120Ω	470K	NC	0Ω	270Ω	
V12	12AU7A	† 6700Ω	† 470K	4000Ω	0Ω	0Ω	† 470K	2.7Meg	0Ω	.1Ω
V13	6C4	• ‡2.2Meg	NC	.1Ω	0Ω	• ‡2.2Meg	• 800K	0Ω		
V14	6AQ5	6.8Meg	0Ω	.1Ω	0Ω	† 450Ω	† 120Ω	6.8Meg		
V15	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V16	6SN7GTB	5.2Meg	† 8300Ω	1500Ω	100K	† 82K	1500Ω	0Ω	.1Ω	
V17	6CU6	TP	.1Ω	NC	† 1900Ω	500K	NC	0Ω	0Ω	TOP CAP ‡ 10Ω
V18	6AX4GT	NC	NC	INF	TP	† 120Ω	NC	.1Ω	0Ω	
V19	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡410Ω
V20	5U4GB	NC	50K	NC	17Ω	NC	19Ω	NC	50K	
V21	17HP4	0Ω	22K	PIN 6 0Ω	PIN 10 ‡20Ω	PIN 11 • 200K	PIN 12 .1Ω			

† MEASURED FROM PIN 2 OF V20.
‡ MEASURED FROM PIN 3 OF V18.
* MEASURED IN "UHF" POSITION.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS TOP VIEW

HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	UHF Oscillator	6AF4A	Note 1
V2	RF Amplifier	6BQ7A	
V3	Mixer-Oscillator	6AT6	
V4	1st Video IF Amp	6BZ6	Note 2
V5	2nd Video IF Amp	6BZ6	Note 2
V6	3rd Video IF Amp - Video Det	6AS6	
V7	Video Output	6CB6	
V8	Sound IF Amp	6AU6	
V9	Sound Det	6AL5	
V10	AF Amplifier	6AV6	
V11	Audio Output	6K6GT	
V12	Sync Sep Sync Phase Inv	12AU7A	Note 3
V13	Vert Osc	6C4	
V14	Vert Output	6AQ5	
V15	Horiz AFC	6AL5	
V16	Horiz Multi.	6BN7A,B	Note 4
V17	Horiz. Output	6CU5	Note 5
V18	Damper	6AX4GT	
V19	HV Rectifier	1X2B	Note 6
V20	LV Rectifier	6AL5	

Note 1. Some versions may use 6AF4 in this application.
Note 2. Some versions may use 6CB6 in this application.
Note 3. Some versions may use 12AU7 in this application
Note 4. Some versions may use 6BN7C1 in this application.
Note 5. Some versions may use 6BQ6GT in this application.
Note 6. Some versions may use 5U4GA in this application

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	HOFFMAN PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V21	17HP4	17HP4/17HP4	17HP4 / 17HP4	① Aluminized ② Silver screen "85"
		17EP4A	17HP4B ①	
		17HP4B ①	17HP4B / 17HP4B ②	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA					
	CAP	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	300	4304A	PRS-048		WT405 / TC68	CDB-T-1009		R304L *
B	200	200							
C	40	200							
C2A	5	50	4333A	PRS1509-8	CNL3-50	TC30	TD-5-50	MMT-0505	TVA-3415
B	5	25			CNL5-50	TC30	TD-5-50	MMT-0505	

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	5									N900
C4	5									N900
C5	15									N80
C6	3.5									N330
C7	1000			EF-001	MFT-1000				503C-D1	
C8	1000			EF-001	MFT-1000				503C-D1	
C9	180			BPD-0003	DD-121	L10T13	ED-120	UC-5312	5GA-T12	
C10	6.8			NPO-SI 6.8	TCZ-6R8	C10Y5C	TCO-1	UC-5355	5TCC-Y4T	
C11	6.8			NPO-SI 6.8	TCZ-6R8	C10Y8C	TCC-6.8	ZT-5558	5TCCB-Y6R	
C12	6.8			NPO-SI 6.8	TCZ-6R8	C10Y8C	TCC-6.8	ZT-5558	5TCCB-Y6R	
C13	1000			EF-001	MFT-1000				503C-D1	
C14	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C15	2.2			NPO-SI 2.2	TCZ-2R2	C10W2C	TCO-2.2		5TCCB-Y2Z	NPO
C16	3-12			BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C17	1500									
C18	5-5			EF-001	MFT-1000				503C-D1	
C19	1000			EF-001	MFT-1000				503C-D1	
C20	1000			EF-001	MFT-1000				503C-D1	
C21	1000			EF-001	MFT-1000				503C-D1	
C22	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C23	2.2			NPO-SI 2.2	TCZ-2R2	C10W2C	TCO-2.2		5TCCB-Y2Z	10%
C24	470			BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C25	1000			EF-001	MFT-1000				503C-D1	
C26	5				TCZ-5R	C10Q5B	TCT-5R		5TCU-Q5R	N750
C27	470			BPD-0004	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C28	1000			EF-001	MFT-1000				503C-D1	
C29	5				TCZ-5R					N900
C30	.5				539-3		BU15-D	CT565A		
C31	10									N1400
C32	1000			EF-001	MFT-1000				503C-D1	
C33	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C34	2.2		4089	NPO-SI 2.2	TCZ-2R2	C10Y2C	TCO-2.2		5TCCB-Y2Z	10%
C35	470		14050	BPD-0004	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C36	1000		14051	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C37	47			NPO-SI 47	TCZ-47	C10Q4TC	TCC-47	ZT-5547	5TCC-Q4T	NPO
C38	470		14050	BPD-0004	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C39	1000		14051	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C40	47			NPO-SI 47	TCZ-47	C10Q4TC	TCC-47	ZT-5547	5TCC-Q4T	NPO
C41	1000		14051	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C42	470		14050	BPD-0004	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C43	470		14050	BPD-0004	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C44	1000		14051	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C45	10		14068	NPO-SI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	10%
C46	1	200	4143	P288N-1		C10B2P		GEM-401	5TM-P1	
C47	5000		4039	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C48	5000		4039	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C49	47		14067	NPO-SI 47	TCZ-47	C10Q4TC	TCO-47		5TCC-Q4T	NPO
C50	.1	400	4150	P488N-1		DF-104		GEM-401	4TM-P1	
C51	.047	300	4147	BPD-003		DF-503		GEM-2147	2TM-S47	
C52	.01	200	4143	P288N-1		DF-104		GEM-201	2TM-P1	
C53	.047	300	4147	BPD-003		DF-503		GEM-2147	2TM-S47	
C54	1000		14031	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C55	1000		14031	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C56	.1	200	4143	P288N-1		DF-104		GEM-201	2TM-P1	
C57	.047	200	4147	BPD-05		DF-503		GEM-2147	2TM-S47	
C58	3.3		4089	NPO-SI 3.3		TCZ-3R3	C10Y2C	TCO-3.3		10%
C59	47		14067	NPO-SI 47		TCZ-47	C10Q4TC	TCO-47		NPO
C60A	4000 \		4038	BPD-2X004		DS-403 ②	C15C0D	EDS-004	DCD504	5HK-D04
B	4000 /					DS-402 ②				
C59	5000		4039	BPD-005		DD-502	BYA10D5	ED-005	DC525	5HK-D5
C60	5000		4039	BPD-005		DD-502	BYA10D5	ED-005	DC525	5HK-D5
C61	5000		4039	BPD-009		DD-502	BYA10D5	ED-005	DC525	5HK-D5
C62	.0047	400	4127	BPD-0047		DD-472	CUBD247	GP-4700	GEM-6247	6TM-D47
C63	.022	400	4130	BPD-02		DD-203	CUBD323	ED-02	GEM-6422	6TM-S22
C64	.0022	400	4126	BPD-0022		DE-222	CUBD122	EP-2200	GEM-6222	6TM-D22
C65	220	400	4094	BPD-00022		DD-221	L10T22	ED-220	UC-5322	5GA-T22
C66	.0047	400	4127	BPD-0047		DD-472	CUBD247	GP-4700	GEM-6247	6TM-D47

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C67	0033	400	4138		BPD-0033	DD-303	CUBD322	EP-3300	GEM-6322	6TM-D22
C68	.0047	400	4127		BPD-0047	DD-472	CUBD247	GP-4700	GEM-6247	6TM-D47
C69	.0047	400	4127		BPD-0047	DD-472	CUBD247	GP-4700	GEM-6247	6TM-D47
C70	0033		4038		BPD-003	DD-303	BYA10D5	ED-005	DC525	5HK-D5
C71	.1	400	4150		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1
C72	.02	600	14044		BPD-02	DD-203	CUBD822	ED-02	GEM-813	6TM-S2
C73	30000		14044		BPD-03	DD-303	BYA10D2	ED-02		5HK-S3
C74	30000		14031		BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1
C75	.047	200	4147		BPD-05	DF-503	CUBD347		GEM-2147	3TM-S47
C76	.047	200	4147		BPD-05	DF-503	CUBD347		GEM-2147	3TM-S47
C77	.001	300	4175		BPD-001	DD-102	CUBD2R	GP-1000	GEM-821	6TM-D1
C78	.001	300	4175		BPD-001	DD-102	CUBD1R	GP-1000	GEM-821	6TM-D1
C79	.0047	400	4127		BPD-0047	DD-472	CUBD247	GP-4700	GEM-6247	6TM-D47
C80	.047	200	4147		BPD-05	DF-503	CUB2347		GFM-2147	2TM-S47
C81	3900		4068		1467-0038	DD-392	BYA10D4	CY30C392B	UC-5339	1FM-339
C82	470		14050		1468-00047	DD 471	5W5T47	CY15C471K	UC-5347	1FM-347
C83	470		14050		1468-00047	DD-471	5W5T47	CY15C471K	UC-5347	1FM-347
C84	5000		4039		BPD-005	DD-503	BYA10D5	ED-005	DC525	5HK-D5
C85	.22	250	4131		P289S-22		CUBP222		GEM-2022	2TM-P22
C86	.047	600	4133		BPD-06	DF-503	CUBD647		GEM-6147	6TM-S47
C87	47	3000	14048		HVD-30-47		HVA30Q47	HDS-47	DC30447	30GAB-Q47
C88	.1	600	4144		P488K-1		DF-104		GEM-601	6TM-P1
C89	47	3000	14048		HVD-30-47		HVA30Q47	HDS-47	DC30447	30GAB-Q47

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	4987	B-60	A47-500K-2	Q31-133	U48	Volume
B	Shaft			Not Req.	KS8-5	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	U3-28	
R2A	100K	½	4986	B-59	A47-500K-3	Q31-133	TA55L	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R3A	150K	½	4985	B-43	A47-150K S	Q31-218	TA39L	Brightness
B	Shaft			Not Req.	KS8-2	Not Req.	Not Req.	
R4A	500Ω	½	4968	B-4	A47-500-8	Q31-105	TA55L	Contrast
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R5A	4Meg	½	4970	B-86	A47-4Meg-S	Q31-141	TA56L	Vert. Size
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R6A	50K	½	4972	BX-31	A47-50K-S	Q31-123	TA54L	Vert. Lin.
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R7A	4Meg	½	4970	B-86	A47-4Meg-S	Q31-141	TA56L	Area
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	OHMS	WATT	HOFFMAN PART No.	IRC PART No.		
R8	680K 5%			BTS-680K 5%		
R9	680K 5%			BTS-680K 5%		
R10	10K		4597	BTS-10K		
R11	680Ω			BTS-680K		
R12	100K		4571	BTS-100K		
R13	10K		4597	BTS-10K		
R14	820K			BTS-820K		
R15	680K			BTS-680K		
R16	680Ω			BTS-680		
R17	680Ω			BTS-680		
R18	220K			BTS-220K		
R19	100K		4571	BTS-100K		
R20	82000		4651	BTS-8200		
R21	33000	1		BTA-3300		
R22	10K		4597	BTS-10K		
R23	100K		4571	BTS-100K		
R24	37000 5%		14533	BTS-37000 5%		Note 1
R25	560K		4590			
R26	270K		4602	BTS-270K		
R27	47K		4559			
R28	470Ω		4636			
R29	4700		4635	BTS-470		
R30	470Ω		4638	BTS-470		
R31	470Ω		4639	BTS-47		
R32	470Ω		4638	BTS-470		Note 2
R33	15K					
R34	470Ω		4638	BTS-470		
R35	47Ω		4639	BTS-47		
R36	47K		4559	BTS-47K		
R37	470Ω		4638	BTS-470		
R38	10000	2	14598	BTS-1000		
R39	150Ω		4646	BTS-150		
R40	22000 5%			BTS-2200		
R41	4700Ω		4378	BTS-4700		
R42	47K		4559	BTS-47K		
R43	1.5Meg		4605	BTS-1.5Meg		
R44	2K		4646	BTS-2K		
R45	470K		4622	BTS-470K		
R46	4700Ω	1	4670	BTA-470		
R47	180K		4634	BTS-180K		
R48	82000		4557	BTS-8200		
R49	150Ω		4646	BTS-150		
R50	180Ω		14618	BTS-180		

Note 1. A 12000, 1W (Part #24500) used in VHF versions.
Note 2. Some versions may use a 47K (part #4559) in this application.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	OHMS	WATT	HOFFMAN PART No.	IRC PART No.						
R51	10K		4597	BTS-10K						
R53	10K		4597	BTS-10K						
R53	10Meg		4655	BTS-10Meg						
R54	220K		4618	BTS-220K						
R55	470K		4622	BTS-470K						
R56	2700		4683	BTS-270						
R57	10K		4597	BTS-10K						
R58	2.2Meg		4606	BTS-2 2Meg						
R59	470K		4622	BTS-470K						
R60	470K		4622	BTS-470K						
R61	27000 5%		24533	BTS-2700 5%						
R62	3900Ω		4527	BTS-3900						
R63	1800Ω		4640	BTS-1800						
R64	22000 5%		24535	BTS-2200 5%						
R65	22K		4628	BTS-22K						
R66	8200Ω		4651	BTS-8200						
R67	8200Ω		4651	BTS-8200						
R68	560K		4590	BTS-560K						
R69	1Meg		4604	BTS-1Meg						
R70	5.6Meg		4604	BTS-5 6Meg						
R71	33K		4586	BTS-33K						
R72	68K		4609	BTS-68K						
R73	33K		4618	BTS-33K						
R74	120Ω		4646							
R75	100K		4571							
R76	100K		4571							
R77	4.7Meg		24659							
R78	470K		4622							
R79	8200Ω		4651	BTS-8200						
R80	1500Ω 5%		4610	BTS-1500 5%						
R81	100K		4571							
R82	82K		24670	BTS-82K						
R83	5800Ω		4629							
R84	470K		4622	BTS-470K						
R85	33K		4618	BTS-33K						
R86	18000	1	24618	BTA-1800						
R87	15Ω	1	14509							
R88	1000Ω		4659							
R89	2.2Ω 5%		4735	BW1-2.2 5%						
R90	12K		4648	BTS-12K						
R91	1000	10	4702A							
R92	330K		24651	BTS-330K						

TRANSFORMER (POWER)

ITEM No	RATING				REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	130VAC	430VCT	5V	6.3V	5066						
	Tap ① 117VAC ② 1.9A	@ .390A	@ 3A	@6.4A							

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc.	8176-2	B6704	A-3006		V406	A-8125	28A05	A-12Z5 ①
	Alt. Vert.Osc.	8176	B6704	A-3006		V406	A-8125	28A05	A-12Z5 ①
T3	Vert. Output	8106A-3	21805 ①②	A-3825		V306 ①②	VO-104 ①	28S57 ①②	A-10Z6 ①
	Alt.Vert. Output	8106A	21805 ①②	A-3825		V306 ①②	VO-104 ①	28S57 ①②	A-10Z6 ①
T4A	Yoke-Horiz. (24MS)	99794	DF603 ②	MDF-7403 ②	214GH ③	V7073 ②	DY-10A ③	Y-II ②	Y20 A NW1
B	(70°) Vert. (3.5MS)								
	Alt. Yoke (70°)	99740							
T5	Horiz. Output	8185A-3	F9418 ①*8	HVO-36 ① *2	2357 ① *2	X094 ① *2	HO-350 ① *2	FLY-16 ① *2	D-50 ① *2
	Alt. Horiz. Output	8185A							

① Drill new mounting hole(s).
② Connect as auto transformer.
③ Use original yoke damping network.
† This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Part Number Of Correct Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
7	9	9	9	9	9	9	9
4	7	7	7	7	7	7	7
1	1	1	1	1	1	1	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI	SEC	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No	Thordarson PART No	Triad PART No	
T6	7800Ω	3-4Ω	5126A	21115 ①	A-2931 ①	A-3678 ①	24849	S-8X	① Drill one new mounting hole.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		HOFFMAN PART No.	QUAM PART No.		
	SIZE	FIELD	V. C. IMP.		
SP1	4"	PM	3-4Ω	9117-2	4A07

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA				NOTES
		HOFFMAN PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	
L1	1st. Video IF	5319A		TV-131	6238	
L2	2nd. Video IF	5238A	17-4835		6231	Includes 41.25MC Trap
L3	3rd. Video IF	5237A			6232	Includes 47.25MC Trap
L4	4th. Video IF	5354A	17-5004	TV-125	6234	
L5	Series Peaking Coil	5283A	19-3100	TV-181	6132	100 Microhenries
L6	Shunt Peaking Coil	5250A	19-3300		6132	350 Microhenries
L7	Series Peaking Coil	5351A	19-4400 *		6134 *	330 Microhenries, wound on 5300Ω resistor
L8	4.5MC Trap	5332A	20-1004	TV-181	1469	
L9	Shunt Peaking Coil	5248A	19-3100 ▲	TV-181▲	6177 ▲	100 Microhenries, wound on 6800Ω resistor
L10	1st Sound IF	5321A	20-1004	TV-151	1469	
L11	Ratio Det.	5252A	17-3497	TV-115	6205	

* Parallel with a 2200Ω resistor.
▲ Parallel with a 6800Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOFFMAN PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	RCA TYPE No	Ram PART No	Thordarson PART No	
L12	55Ω		5447	19-1578	TV-163	6310			HS-5	20, 5-45MHenries

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		HOFFMAN PART No	CBS PART No.	SYLVANIA PART No.	
M1	1N82A		1N82A	1N82A	UHF Mixer (Clip-in)

MISCELLANEOUS

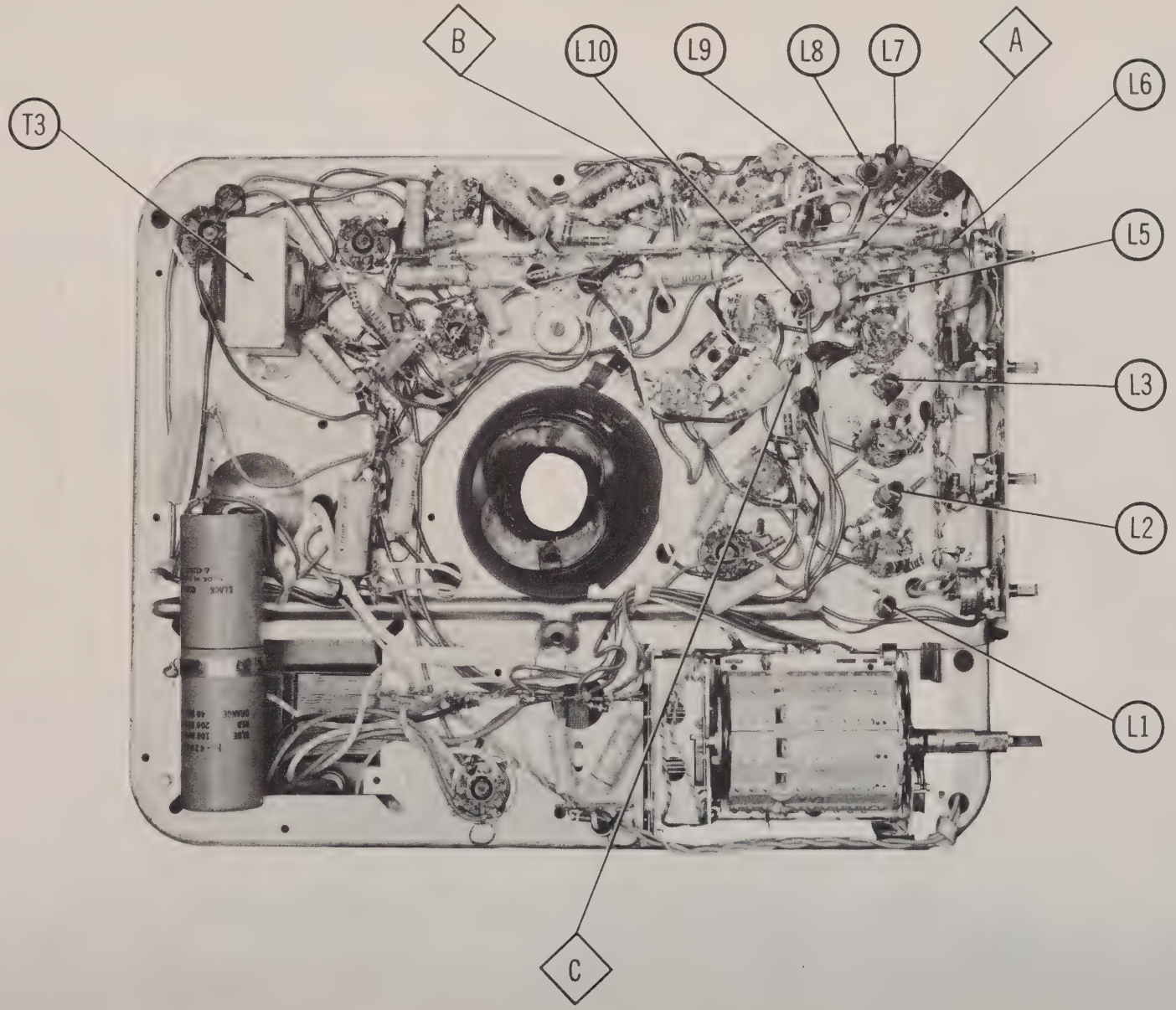
ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Tuner	9880	UHF-VHF, Ch. 315U
	Tuner	9850	VHF, Ch. 315
	Tuner	9927	VHF, Ch. 315 (Code C)
M3	Centering Device	9722	
M4	Ion Trap	9702	

CABINETS & CABINET PARTS

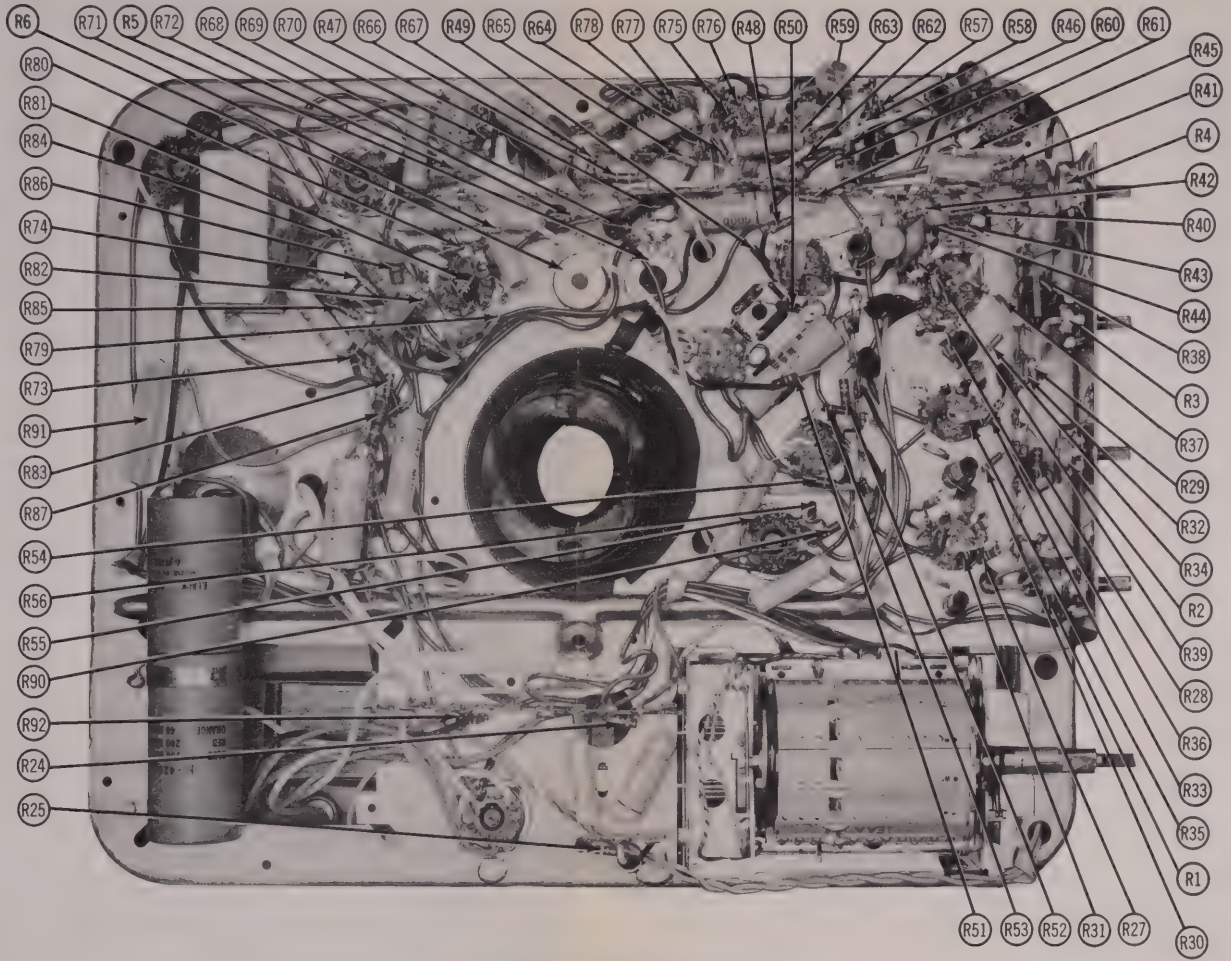
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	808	
Mask	3535A	UHF Channel Selector, Models M1007U, B1007U, P1007U, W1007U
Knob	3375S	VHF Channel Selector, Models M1007U, B1007U, P1007U, W1007U
Knob	3376D	VHF Dial, VHF Fine Tuning, Models M1007U, B1007U, P1007U, W1007U
Knob	3370S	VHF Channel Selector, Models M1007, B1007, P1007, W1007
Knob	3370A	Fine Tuning, Models M1007, B1007, P1007, W1007
Knob	3382A	On-off-volume
Knob	3382A	Contrast
Knob	3380A	Vert. Hold
Knob	3381A	Brightness
Cabinet	7853	Cherry
Cabinet	7850	Mahogany
Cabinet	7851	Oak
Cabinet	7852	Walnut

HOFFMAN MODELS B1007, U, M1007, U, P1007, U, W1007, U (Ch. 315, U)



TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RESISTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

KNIGHT
MODEL 96RZ940

KNIGHT
MODEL 96RZ940

GENERAL INFORMATION

The Knight Model 96RZ940 uses pushbutton control. Two tracks of material can be recorded and played back on standard width recording tape. This doubles the playing time of a standard 5" or 7" reel of tape with no loss of quality or frequency response. Recordings can be made from a radio, television receiver or phonograph. Recordings can be played back through either the self-contained speaker or through an external speaker by using the External Speaker Jack.

Using both channels of the tape, the recording time is as follows:

SIZE	3 3/4" SPEED	7 1/2" SPEED
5" reel (600 ft.)	1 hour	1/2 hour
7" reel (1200 ft.)	2 hours	1 hour.

The Knight is designed to operate on 60 cycle, 115V. AC supply only. Before connecting to a line supply, be absolutely certain that it agrees with the above specifications.

Supplied by:

Allied Radio Corporation
833 W. Jackson Blvd.
Chicago 7, Illinois

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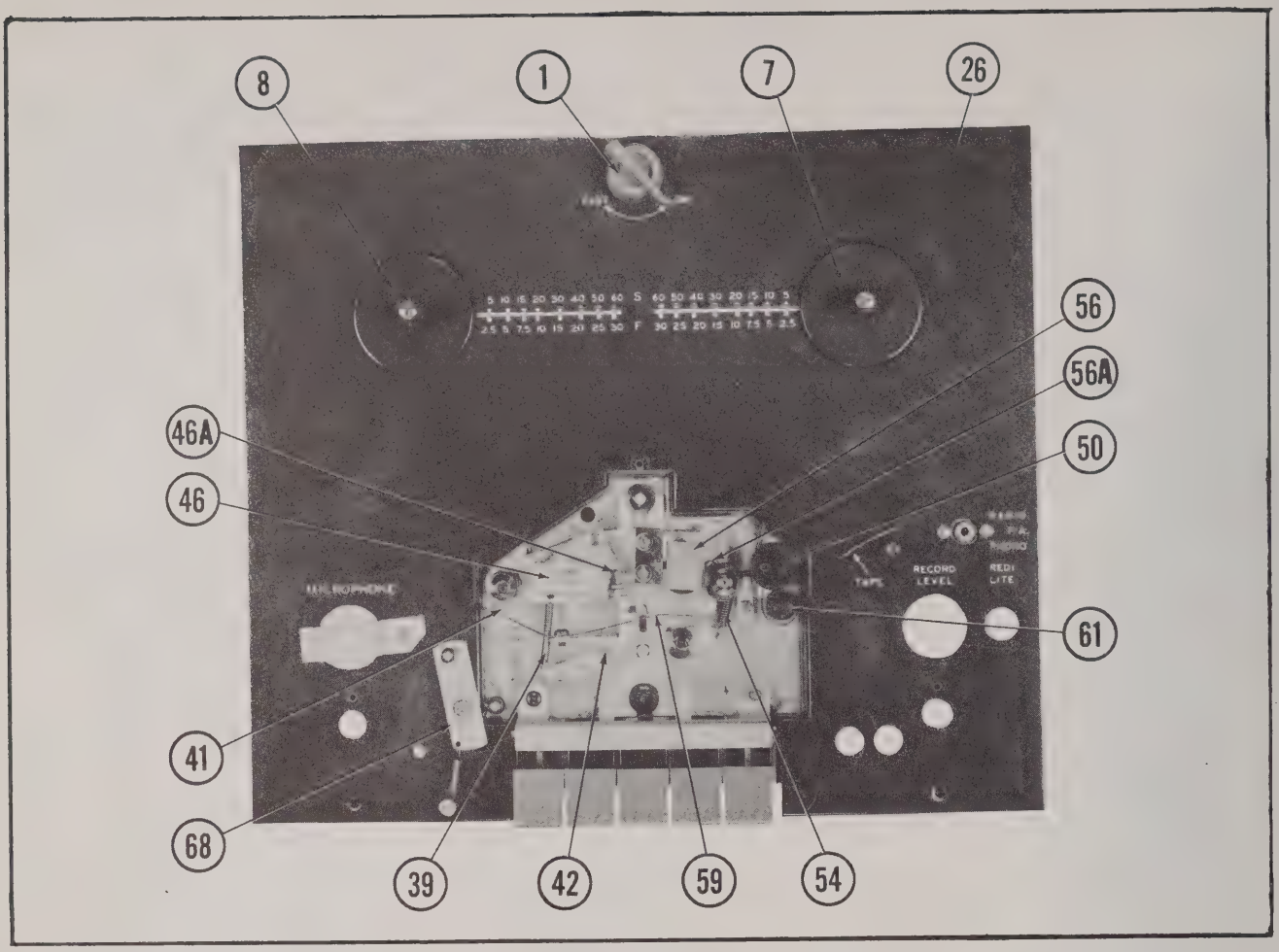


FIGURE 1

OPERATING INSTRUCTIONS

Preparation For Operation

1. Remove the AC power cord, 5" reel of tape, empty reel and the microphone from the storage compartment.

2. Depress the stop button until it locks.

3. Plug the AC cord into a convenient wall receptacle of the proper rating.

4. Set speed change knob to "Slow" or "Fast" as desired.

CAUTION: Do not turn speed change knob unless "Stop" button is depressed.

When the Forward or Reverse buttons are depressed, the Play and Record buttons are locked in the up position. This prevents the possibility of spilling the tape. All buttons should be depressed firmly until they latch. The "Stop" button must be depressed before changing functions or speeds of the recorder.

IMPORTANT: Always depress the "Stop" button when recorder is not in use.

Speed Change Knob

The arrow on the speed change knob (1) should point at "Fast" or "Slow" according to the speed desired. This recorder has two speeds "Fast" — 7 1/2" per second and "Slow" — 3 3/4" per second tape speed.

CAUTION: Turning the speed change knob while the unit is operating will not change the speed. The "Stop" button must be depressed before the speed can be changed.

Threading The Tape

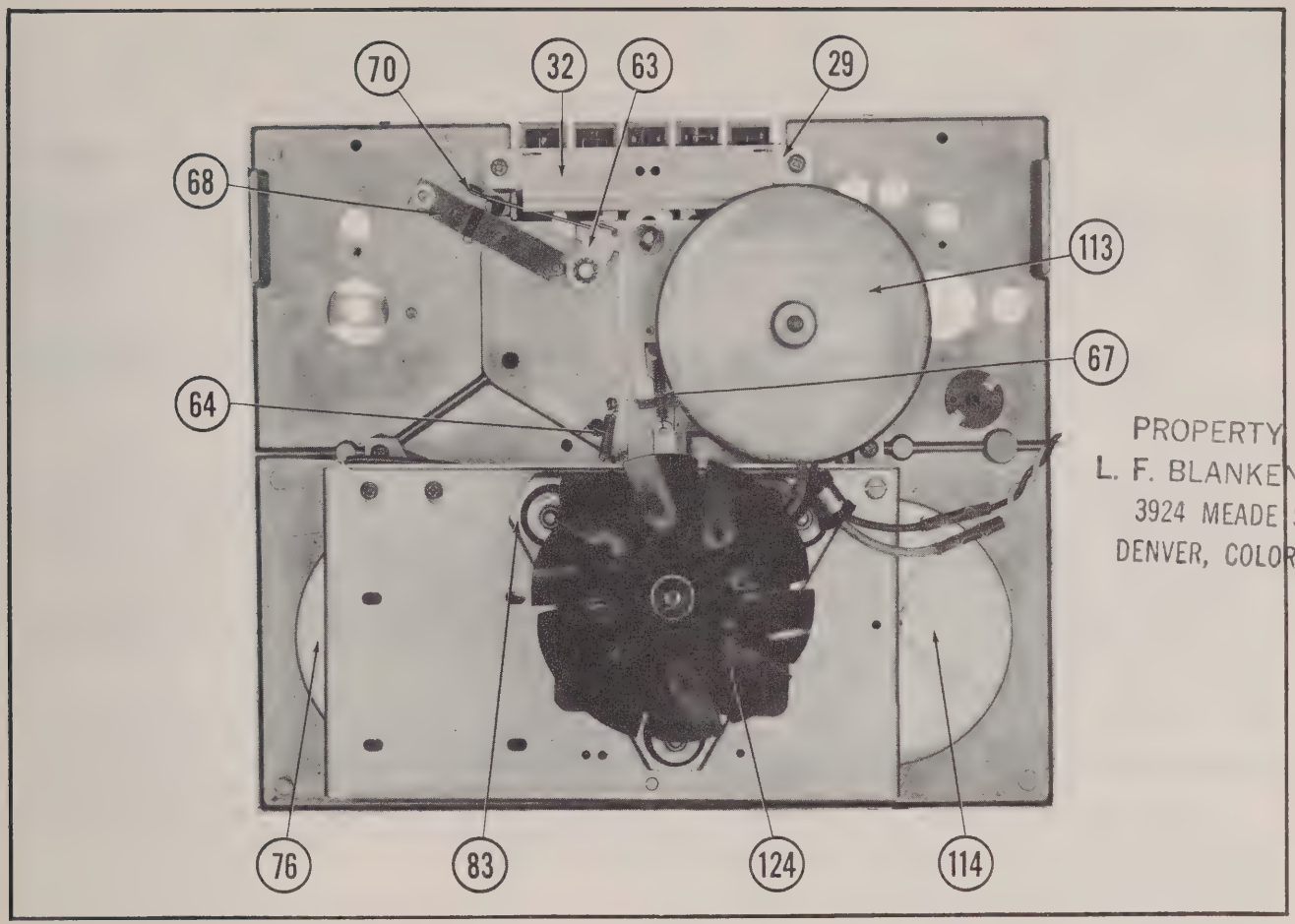
1. Place a full reel of tape on the left (feed) reel plate (8), making sure the slots in the reel are seated on the pan protrusions. Unwind about 14" of tape from the reel.

2. Hold a section of the unwound tape straight with both hands and insert the tape in the tape slot between the escutcheons making certain the dull (coated) side of tape is facing the back of the recorder.

3. Insert the free end of the tape into one of the three slots in the hub of the empty (take-up) reel. Place the take-up reel on the take up spindle (7) and wind up the tape until it is secured on the reel.

To Record From Microphone

1. Turn the On-Off-Volume control (9) to the right until a click is heard, then allow about 30 seconds for the unit to warm up. The "Redilite" will glow when the unit is turned on.



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DENVER, COLORADO

FIGURE 2

2. Insert the microphone plug into the "Microphone" jack.

3. Move the record lock button downward with the left hand. This releases the safety lock which prevents accidental erasures.

4. While holding the record lock button, depress the "Record" button with the right hand until it latches.

5. Adjust the "Volume" Control until the "Record" level indicator just flashes while speaking into the microphone. When the volume control is advanced too far, distortion will result.

Note: The "Tone" control does not operate during recording. When recording from a radio, set the radio "Tone" control to maximum treble.

To Record From Radio, TV, or Phono

1. Insert the phonograph pickup plug into the "Radio-P.A.-Phono" Jack.

2. For radio or TV recording, connect patch cord, (part C-20.233) to the voice coil of the radio or TV receiver speaker by means of the alligator clips. Plug into the "Radio-P.A.-Phono" Jack.

3. Proceed as described under "To Record From Microphone".

NOTE: Remove patch cord after recording is completed.

To Use Second Track

1. When all the tape has wound on the take-up reel, depress the "Stop" button.

2. Remove reel containing tape and place it on feed spindle.

3. Place empty reel on take-up spindle.

4. Thread tape as described under "Threading The Tape".

To Play Recordings

1. Turn unit on with "Volume" control knob (9).

2. Thread tape as described under "Threading The Tape".

3. Set the speed change knob (1) to the speed at which the recording was made.

4. Depress "Play" button until it latches.

5. Adjust "Volume" and "Tone" controls to desired listening level.

High Speed Forward or Reverse

Should it be desired to play a portion of the tape it is not necessary to rewind the entire tape. By depressing the "Forward" or "Reverse" button the tape will advance or rewind at a rapid speed to the desired section.

To Edit and Splice Tape

NOTE: It is impossible to edit and splice one track of tape without affecting the second track, therefore recordings to be edited should be limited to one track only.

1. Tape recordings may be edited by cutting out unwanted sections, or by joining selections into another sequence. Announcements can be inserted between selections etc. Unused sections of tape can be spliced together for reuse.

2. For best results cut tape on a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Erasing Recorded Material

When the "Record" button is depressed, the erase head is positioned automatically erasing any previous recording before a new one is made. Material no longer needed may be erased without recording by depressing the "Record" button and turning the "Volume" control to the minimum, (or extreme counter-clockwise position). Only one track is erased at a time. To erase the second track reverse the reels and repeat the above operation.

To Use Recorder As a Public Address System

Insert the microphone plug into the "Microphone" jack. Plug in an extension speaker and depress the "Record" button. Set the "Tone" and "Volume" controls to the desired level. A recording can be made at the same time by placing a tape on the unit in the normal manner.

NOTE: When using the public address feature keep the microphone as far away from the speakers as possible to prevent "feedback" squeal.

ADJUSTMENTS

Record-Play Head Adjustment
(See Exploded View)

For maximum frequency response, adjust the record-play head (56) as follows:

1. Remove the rear escutcheon (4).

2. Thread an alignment tape or good recorded tape in the usual manner.

3. Set the controls as described under "To Play Recordings".

4. With the unit playing turn head adjustment screw (56A) clockwise or counter-clockwise until maximum high frequencies are obtained.

Pressure Pad Adjustment
(See Exploded View)

1. Remove the front escutcheon (13).

2. Depress the "Play" button. Do not turn the recorder on.

3. Using a pencil type postal scale, check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (59). Adjust the pressure pad for 1 3/4 oz. $\pm$ 1/4 oz. pressure as follows:

(a) The record head pressure pad is adjusted by the locked adjustment screw (42).

(b) The guide post pressure pad (41) by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are completed depress the "Stop" button and replace the front escutcheon.

Erase Head Adjustment

1. With tape properly threaded, turn recorder on and depress the "Record" button. Allow tape to run a few seconds then turn recorder off, but leave the "Record" button depressed.

2. With the escutcheons (4) and (13) removed check the erase head (44) to see if it is parallel to the tape.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of the diagonal slot and short vertical slot). To adjust level of tape, loosen set screw (34), (exploded view), and rotate tape guide post (35) to move tape up or down to correct height. Tighten set screw (34).

4. After this adjustment has been made, check to see if tape moves forward approximately 1/64" when the "Record" button is depressed. If not, loosen the forward adjustment screw (44A), exploded view, and turn the screw in or out as required to obtain 1/64" movement. Tighten the locknut. Replace escutcheons.

Brake Shoe Adjustment

1. To adjust the brake shoes the complete mechanism must be removed from the carrying case, and the speaker disconnected.

2. With all push buttons in the up position the brake shoes (99A) should clear the drums by approximately 1/8".

3. Depress the "Stop" button while observing the brake shoes. Both brake shoes must contact the drums at the same time and with equal pressure.

4. Adjust by bending spring arm (99).

Adjustment for Slow Take-Up Reel

1. Occassionally the spring drive belt (51) stretches after a period of time. This results in insufficient drive torque to wind the tape properly on the take-up reel. Replace belt as follows:

(a). Remove rear escutcheon (4) and take-up reel pan (7). Depress the "Stop" button and remove old belt from around the pressure roller (50). Lift clear of recorder. Install new belt by reversing the above procedure.

Bias Adjustment

The bias voltage can be checked without dismantling the unit by connecting a VTVM across the top lug

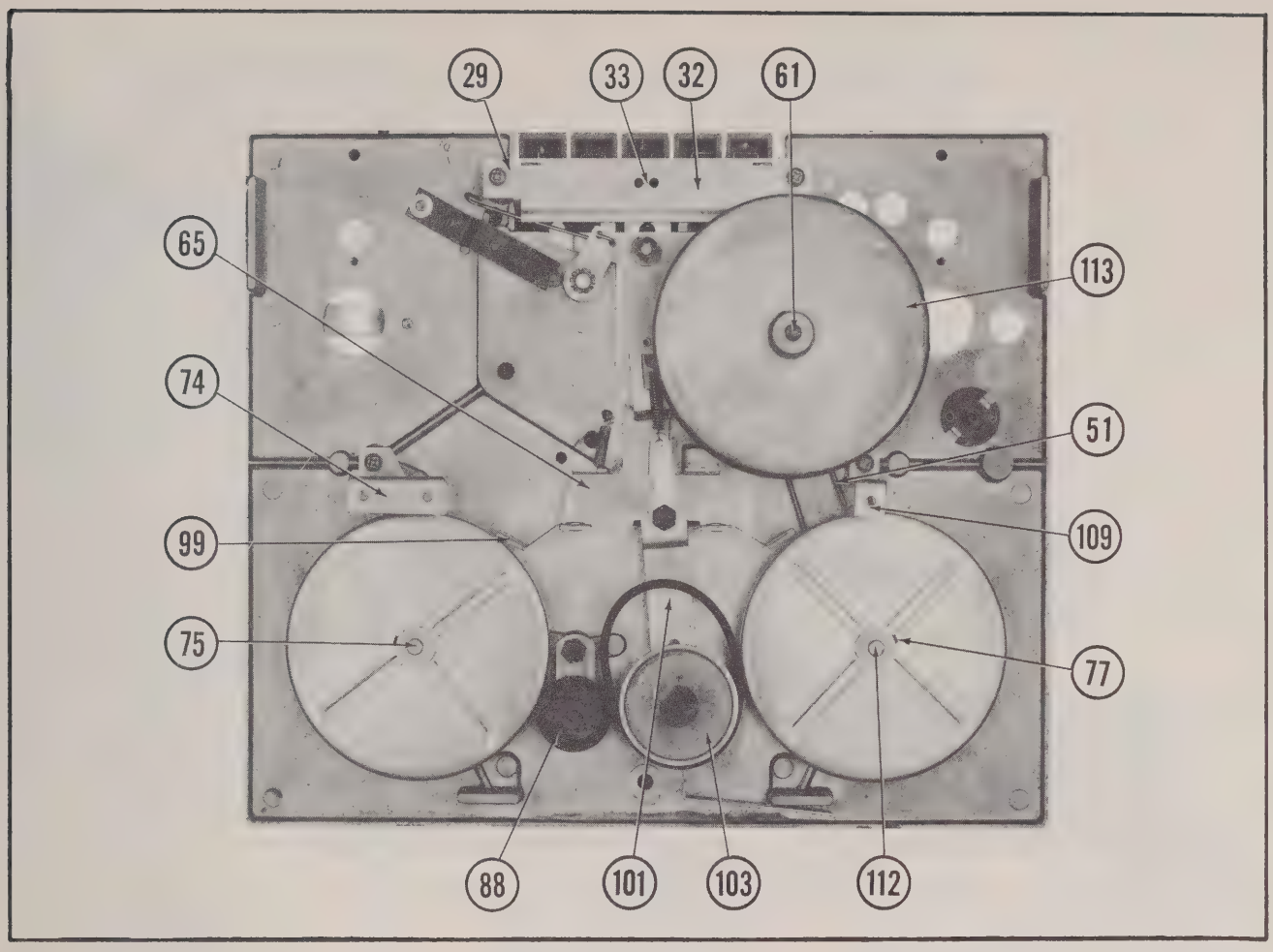

FIGURE 3

of the recording head and chassis. Using no tape, turn the recorder on and depress the "Record" button. If 75 to 100 volts are present no adjustment is necessary.

If the reading is outside this range, proceed as follows:

1. Try a new 12AY7, 12AX7, 6AQ5, and 5Y3.

2. If still not within range, remove chassis and connect a low capacity VTVM from test point "A" to ground. Using low scale adjust trimmer C18 to obtain maximum reading. This provides the optimum in performance.

Neon Record Level Indicator

The neon record indicator firing level adjustment is required only if a neon bulb is replaced. The neon indicator is adjusted for correct firing level by means of the trimmer capacitor. To adjust proceed as follows:

1. Connect a short jumper lead across the bias oscillator coil, L1, to disable the oscillator.

2. Turn the recorder on and depress the "Record" button.

3. Plug an audio oscillator, set at 1000 cycles, into the microphone input jack. Set oscillator output to .01 volt. (A one volt output can be used by connecting a 100 to 1 resistor reduction pad between the oscillator output and microphone input.

4. Connect probe of low capacity type AC VTVM to test point "B" (Junction of coupling capacitor C20 and 330K resistor R22 on terminal strip near volume control).

5. Adjust volume control to obtain a reading of 36 volts on the AC VTVM. Leave volume control set and VTVM connected.

6. Remove shorting lead from across bias oscillator coil.

7. Turn indicator trimmer C22 fully clockwise and then turn slowly counter-clockwise so that upon loosening the trimmer the bulb barely lights. This adjustment must be made loosening the trimmer. Remove VTVM.

Important: Do not readjust the recording oscillator after setting the indicator light.

TROUBLES

Push Buttons Fail To Latch In Position

1. Lock plate spring (33) loose or broken, resulting in lock plate not being held against the hinge bracket (29).

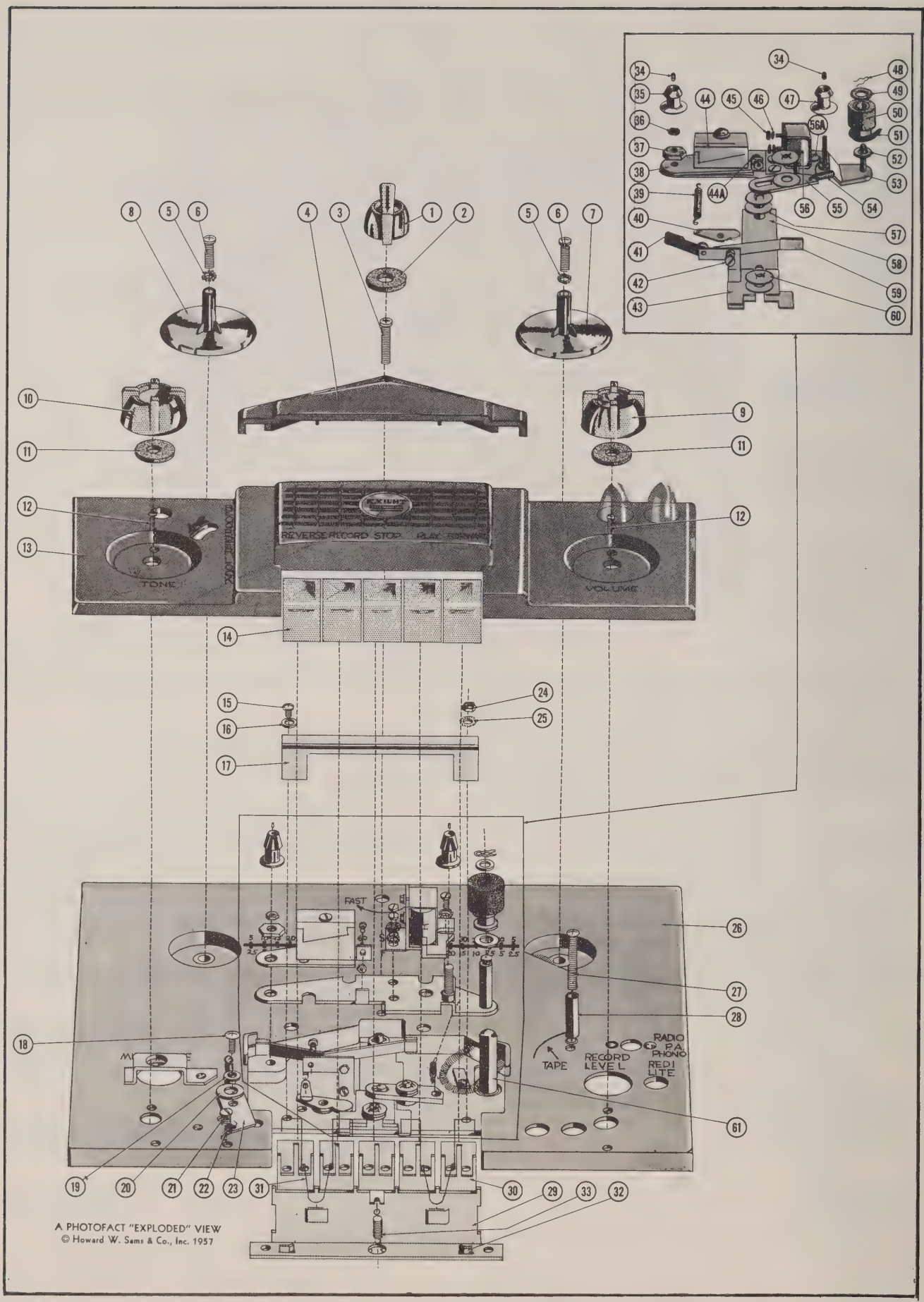

FIGURE 4A – EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

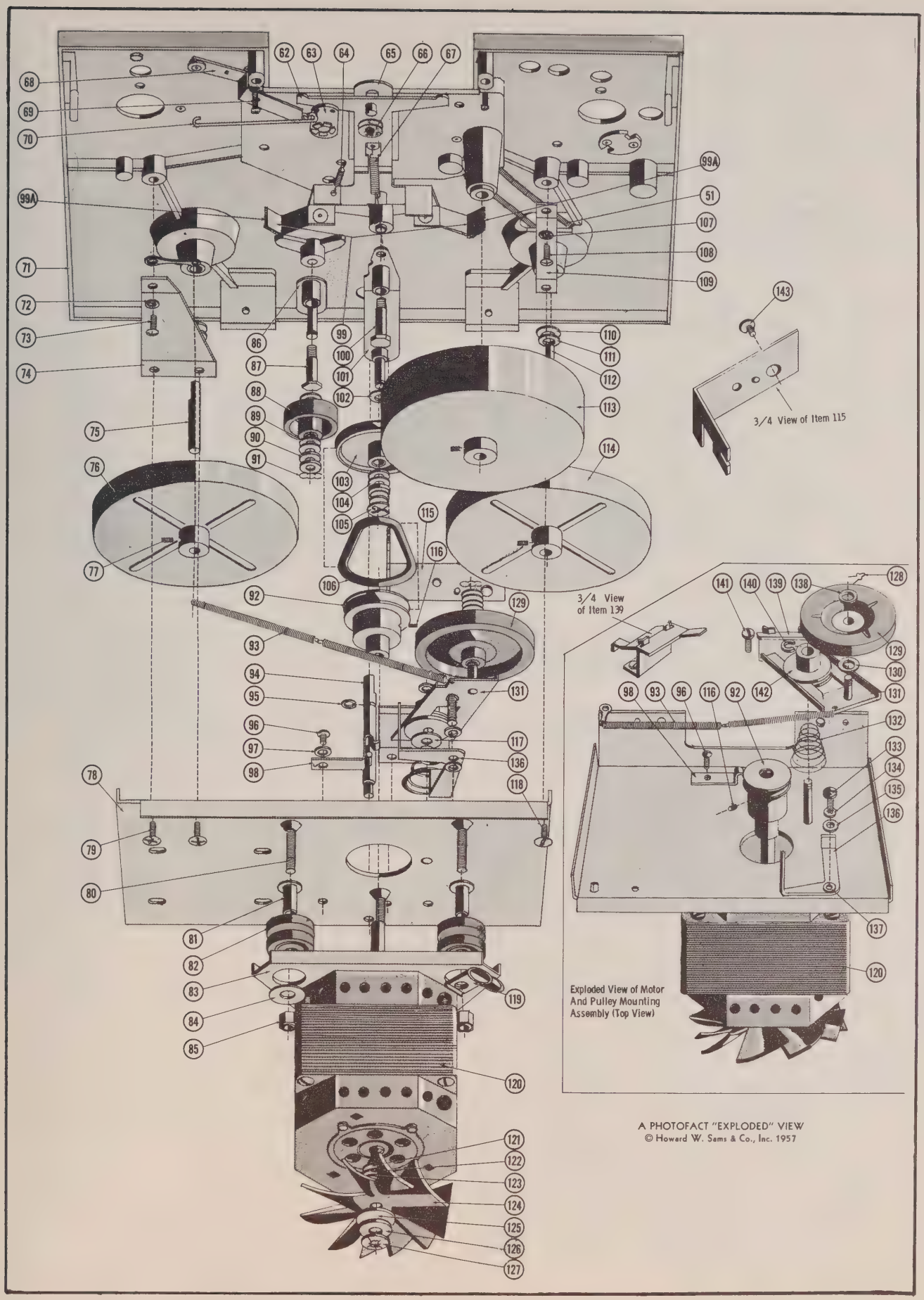
3/4 View of Item 115
3/4 View of Item 139
Exploded View of Motor And Pulley Mounting Assembly (Top View)
A PHOTOFACT "EXPLODED" VIEW
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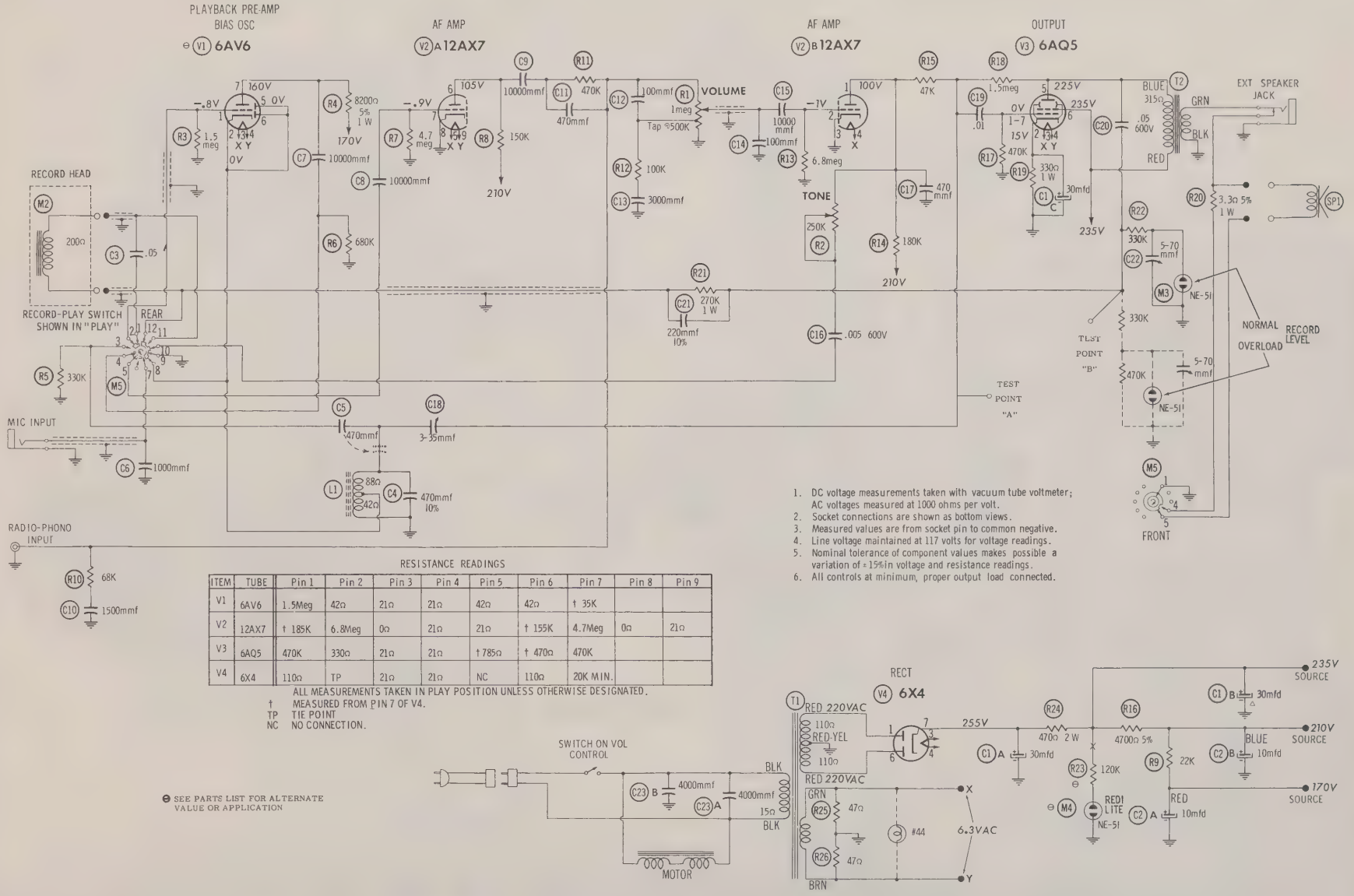
FIGURE 4B – EXPLODED VIEW OF PARTS BELOW BASEPLATE.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	1.5Meg	42Ω	21Ω	21Ω	42Ω	42Ω	† 35K		
V2	12AX7	† 185K	6.8Meg	0Ω	21Ω	21Ω	† 155K	4.7Meg	0Ω	21Ω
V3	6AQ5	470K	330Ω	21Ω	21Ω	†785Ω	† 470Ω	470K		
V4	6X4	110Ω	TP	21Ω	21Ω	NC	110Ω	20K MIN.		

ALL MEASUREMENTS TAKEN IN PLAY POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 7 OF V4.
TP TIE POINT
NC NO CONNECTION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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Fails To Erase

1. Spring (39) loose or broken resulting in the erase head (44) not being pulled forward to engage the tape.

2. Erase head (44) not aligned properly. See "Erase Head Adjustment".

No Fast Forward Or Reverse

1. Idler lever tension spring (67) may be loose or broken, not allowing idler lever (101) to be actuated.

2. Check idler drive belt (106) for proper operation.

No Drive On Record Or Playback

1. Idler tension spring (93) loose or broken, thereby not holding idler wheel (129) in solid contact with motor pulley (92) and flywheel (113).

2. Idler slide plate (131) binding on slide bushing (142) preventing idler wheel (129) from moving into position.

Tape Fails To Wind On Take-Up Reel During Record or Playback

1. Reel drive spring (51) loose or broken. See "Adjustment For Slow Take-Up Reel".

2. Brake drum shaft (112) binding. Clean foreign matter from bearing surface.

Speed Variation or "Wow"

1. Check Capstan (61), pinch roller (50), idler wheel (129), motor pulley (92) and flywheel (113) for oil or foreign matter on the driving surfaces. Clean these surfaces with a good cleaning fluid.

2. Check motor pulley (92) to see if it is secured to motor shaft.

3. Check idler tension spring (93) to see if it is holding idler wheel (129) in firm contact with motor pulley (129) and flywheel (113).

4. Idler slide plate (131) binding on slide bushing (142) preventing idler wheel (129) from making positive connection with motor pulley (129) and flywheel (113).

CLEANING

The record head (56), capstan (61) and pressure roller (50) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, pressure roller and capstan.

CAUTION: Do not use a brush or metal object to clean the record head as this could mar the metal pole piece.

LUBRICATION

All rotating parts are provided with generous size oilite bearings, lubricated at the factory and requiring no further attention.

An occasional cleaning out of foreign material under the plastic pushbutton cover is desirable. Also, a small drop of oil on the sliding members is advisable.

MECHANICAL PARTS LIST

Ref. No.	Part. No.	Description	Ref. No.	Part No.	Description
1	C-13.253-18	Speed Shift Knob	19	73-2231-5	#8 Int. Lockwasher, Stl. C.P.
2	73-2254-3	Felt Washer, 3/4 O.D X 1/4 I.D X 1/16	20	73-2241-148F	Flat Washer 1/2 x .200 x 1/32 Stl. C.P.
3	57-3494-0	Screw #6-32 X 1 OHMS Brass, Phillips	21	57-3586-1	#8-32 x 5/16 Tr. H.M.S. St. Slot Stl. C.P.
4	D-13.264-1	Rear Escutcheon	22	B-31.338B	Record Lock Return Spring
5	73-2231-4	#6 Int. Lockwasher, Stl. C.P. (2 Used)	23	B-35.775B	Interlock Lever & Handle Assembly.
6	57-2049-4	Screw, 6-32 X 1/4 B.H.M.S. Stl. Br. Pltd. (2Used)	24	48-410-1	#6-32 Hex Nut Steel C.P.
7	B-13.262-8	Reel Pan for Take-Up Reel	25	73-2234-3	#6 Ext. Lockwasher Stl. C.P.
8	B-13.262-8	Reel Pan for Feed Reel	26	D-35.861-1	Base Plate Assembly
9	C-13.254-13	Volume Control Knob	27	57-3496-1	#6-32 x 1 R.H.M.S. Phillips Stl. C.P.
10	C-13.254-13	Tone Control Knob	28	B-32.282-A	Tape Guide Post
11	73-2254-3	Felt Washer, 3/4 O.D X 1/4 I.D. X 1/16 (2 Used)	29	B-19.859-1J	Hinge Bracket for Push Buttons
12	57-2624-5	Screw, #6-32 X 3/8 BHMS Phillips Stl. (2 Used)	30	B-19.876D	Push Button Lever (5 used)
13	E-13.265-2	Front Escutcheon	31	B-31.337B	Push Button Return Spring
14	B-13.258	Push Button, Gray, (5 Used)	32	B-19.870C	Push Button Lock Plate
15	57-2109-2	Screw, #6-32 X 3/16 BHMS St. Stat. Bronz Phillips	33	B-31.343A	Lock Plate Spring
16	73-2231-4	#6 Int. Lockwasher Stl. C.P.	34	57-3439-0	#6-32 x 3/16 Bristol Head Set Screw (2 Used)
17	B-19.858	Pushbutton Retainer Bracket.	35	B-32.300D	Tape Guide Post (Left).
18	57-2471-1	Screw, #8-32 x 1/4 RHMS Stl. C.P. Phillips	36	48-410-1	#6-32 Hex Nut Steel C.P.
			37	B-32.260D	Tape Guide Post Spacer
			38	B-35.794	Erase Head Plate Assembly

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Playback Preamplifier Bias Osc.	6AV6	Note 1.
V2	AF Amplifier	12AX7	
V3	Output	6AQ5	
V4	Rectifier	6X4	

Note 1. Some versions use a 6AT6.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 30	250		AFH3-89	CO670	FP216.8	TMD-25	T-340	R2433*
B	▲ 30	250				TC58	TD-30-150	MMT-0210	
C	30	25		PRS250V1010	BBRD8D45	TCD52	TDLD-26	MTD-4510	TVA-2722
C2A	10	200							
B	10	200							

* Non Catalog Item

FIXED CAPACITORS

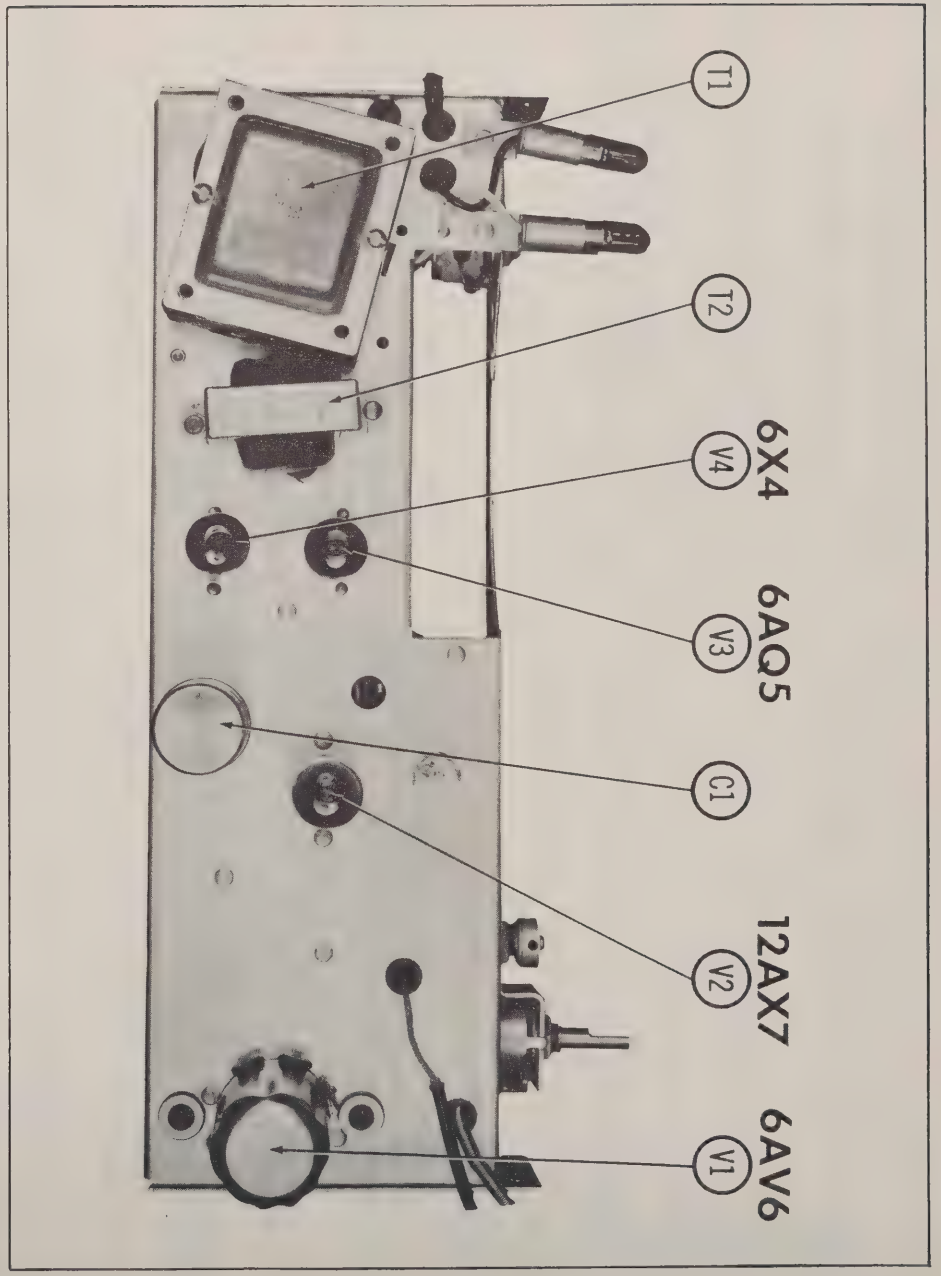
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.05	200	D-3.100-18	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	470		D-4.105-1	1464-00047	D6-471	5R5T47	ED-470		MS-347	10%
C5	470		C-4.109-2	SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C6	1000		C-4.109-9	SI1000	D6-102	LT6D1	GP-1000	DC521	5HK-D1	
C7	10000		C-4.109-33	SI10000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C8	10000		C-4.109-33	SI10000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C9	10000		C-4.109-33	SI10000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C10	1500		C-4.109-13	SI1500	D6-152	LT6D15	GP-1500	DC5215	5HK-D15	
C11	470		C-4.109-2	SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C12	100		C-4.109-10	SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C13	3000		C-4.109-31	SI 3000	D6-302	LT6D3	GP-3000	UC-523	5GA-D3	
C14	100		C-4.109-10	SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C15	10000		C-4.109-33	SI10000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C16	.005	600	D-3.100-4	BPD-005	D6-502	CUB6D5	GP-5000	GEM-625	6TM-D5	
C17	470		C-4.109-2	SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C18	3-35		B-4.144							
C19	.01	400	D-3.100-7	BPD-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C20	.05	600	D-3.100-20	BPD-05	DF-503	CUB6S5		GEM-615	6TM-S5	
C21	220		C-4.109-27	1469-00022	D6-221	L10T22	ED-220		5GA-T22	10%
C22	5-70									
C23A	4000		B-4.131-1	BPD-2X004	D6-402	BYC6DD4	ED2-004	DCD524	5HK-2D4	
C23B	4000				D6-402					

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	C-8.227-2	BT-71	A47F5-1Meg	Q19-137X	UT-443	Volume Tap @ 500K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	250K	½	C-8.231-1	B-50	A47-250K-S	Q11-130	U46	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R3	1.5Meg			BTS-1.5Meg	
R4	8200Ω 5%	1		DCF-8200	
R5	330K			BTS-330K	
R6	680K			BTS-680K	
R7	4.7Meg			BTS-4.7Meg	
R8	150K			BTS-150K	
R9	22K			BTS-22K	
R10	68K			BTS-68K	
R11	470K			BTS-470K	
R12	100K			BTS-100K	
R13	6.8Meg			BTS-6.8Meg	
R14	180K			BTS-180K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R15	47K			BTS-47K	
R16	4700Ω 5%			DCF-4700	
R17	470K			BTS-470K	
R18	1.5Meg			BTS-1.5Meg	
R19	330Ω	1		BTA-330	
R20	3.3Ω 5%	1			
R21	270K	1		BTA-270K	
R22	330K			BTS-330K	
R23	120K			BTS-120K	
R24	470Ω	2		BTB-470	
R25	47Ω			BTS-47	
R26	47Ω			BTS-47	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .31A	440VCT @ .040A	6.3V @ 1.6A		C-9.281 *			P-6348 ①		

① Tape Center Tap On 6.3V Fil. Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω	3-4Ω	B9.282-3	Z1107	A-2930	A-3877	24S51	S-3X	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		KNIGHT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Bias Osc. Coil	B-1.557				37 Millihenries

* Tapped @ 42Ω

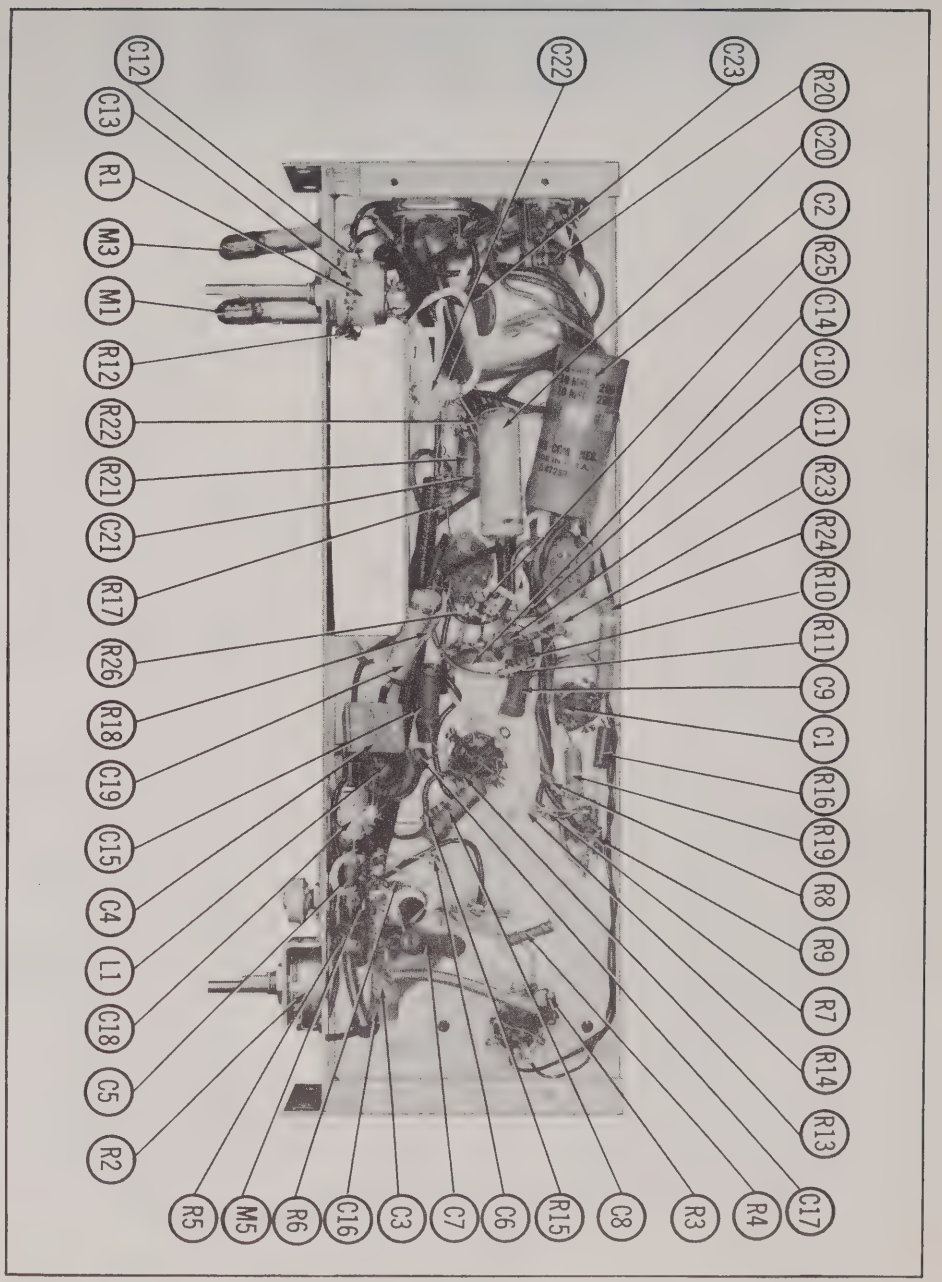
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	KNIGHT PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	30.447	4A07	

MISCELLANEOUS

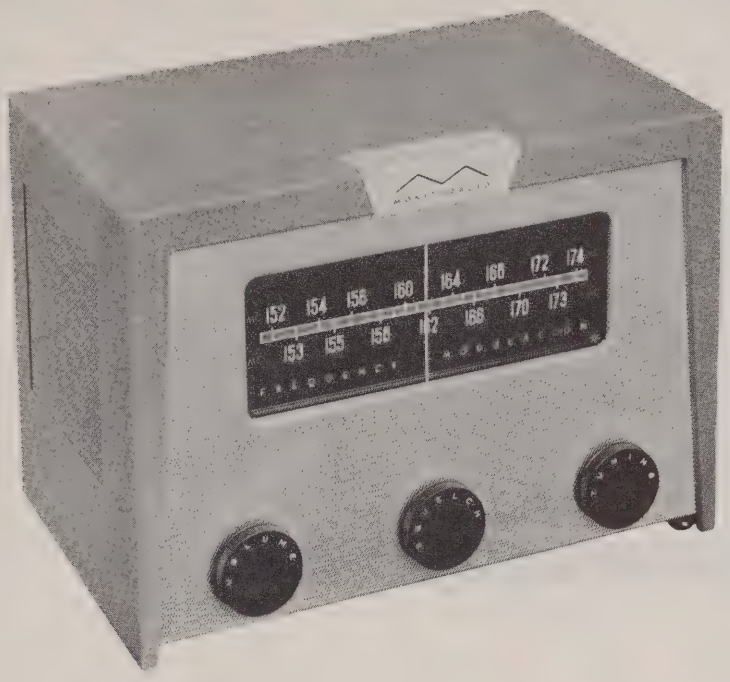
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Erase Head	B-35.794	
M2	Record Head	C-36.156E	
M3	Neon Bulb	45-2036	NE51
M4	Neon Bulb	45-2036	NE51
M5	Switch	B-11.239	Function
	Chassis Cover	D-19-895	
	Motor	D-36.154G	

CHASSIS—BOTTOM VIEW



MECHANICAL PARTS LIST (CONTINUED)

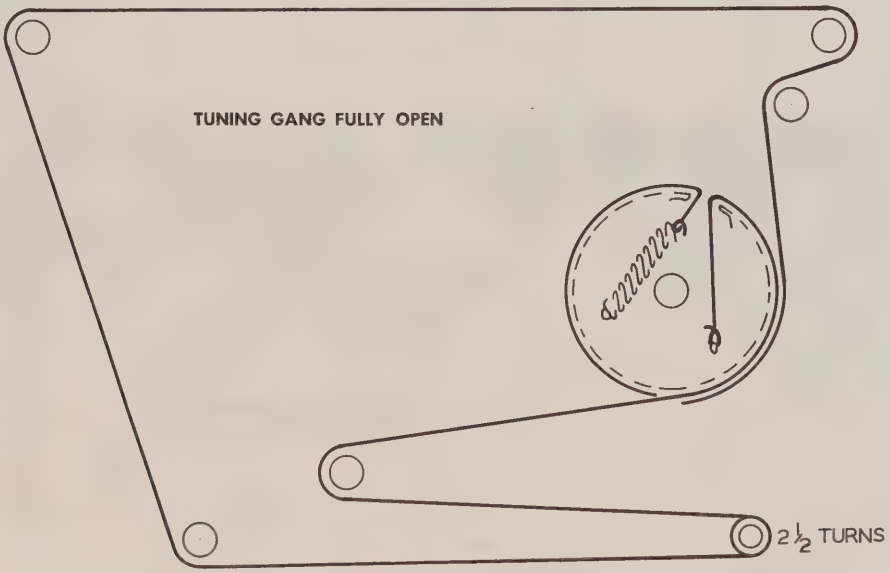
Ref. No.	Part No.	Description
39	B-31.361	Erase Head Tension Spring
40	B-35.882	Record Actuating Lever Assembly
41	B-31.334A	Pressure Pad Felt (2 Used)
42	57-428-1	#6-32 x 3/8 R.H.M.S. Stl. C.P.
43	B-19.868A	Record Slide Plate
44	C-35.756A	Erase Head
45	48-2216-1	#2-56 x 3/16 Hex Nut Brass C.P. (2 Used)
46	73-2233-1	#2 Int. Lockwasher (2 Used)
47	B32.309	Tape Guide Post (Right)
48	B-33.409	Hairpin Clip
49	73-2340	Linen Washer
50	B-33.404E	Pinch Roller
51	B-31.351A	Reel Drive Belt (Spring)
52	73-2340	Linen Washer
53	B-35.871	Pinch Roller Plate Assembly
54	B-31.360	Pinch Roller Tension Spring
55	B-19.881C	Playback Actuating Lever
56	C-36.156E	Tape Recording Head (Shure TR 16A)
57	73-2241-148F	Flat Washer
58	B-35.758	Playback Slide Plate Assembly
59	B-35.764D	Pressure Pad Spring Assembly
60	B-33.412	Push-On Stud Nut, 3/16" Stud
61	B-32.259-1G	Capstan Shaft.
62	B-35.759	Shift Plate Assembly
63	35.859-2	Switch Lever Assembly
64	B-31.338B	Brake Return Spring
65	51-3233-A	Brake Slide Plate Assembly
66	B-33.412	Push-On-Stud Nut, 3/16" Stud
67	B-31.339-C	Idler Lever Tension Spring
68	B-35.774	Record Interlock Assembly
69	57-2474-1	#8-32 x 5/16 RHMS Stl. C. P. Philips (2 Used.)
70	B-31.333	Switch Arm Link
71		(Bottom View of Item 26)
72	73-2231-5	#8 Int. Lockwasher Stl. C.P.
73	57-2474-1	#8-32 x 5/16 RHMS Stl. C.P. Phillips
74	B-19.863	Drive Mounting Plate Bracket
75	B-32.297-B	Brake Drum Shaft (Grooved)
76	C-35.823-E	Brake Drum and Bushing Assembly
77	57-3589-1	#8-32 x 1/4 Bristol Head Screw (3 Used)
78	D-35.753-1	Drive Mounting Plate Assembly
79	57-2474-1	#8-32 x 5/16 RHMS Stl. C.P. Phillips (2Used)
80		Motor Mounting Screw (3 Used)
81		Spacer, Motor Mounting (Part of Item 82)
82	B-28.159	Shock Mount
83	C-19.837F	Motor Adapter Plate
84	B-33.411A	Flat Washer
85	48.409-1	Hex Nut.
86	B-35.757D	Sub Idler Plate Assembly
87	B-32.275-1E	#8-32 H H Shoulder Screw
88	B-35.405F	Sub Idler Wheel for Reverse
89	73-2254-6	Felt Washer (2 Used)
90	73-2241-150	Flat Washer
91	B-33.409	Hairpin Clip
92	B-32.288D	Motor Drive Pulley
93	B-31.324A	Idler Spring (Tension)
94	C-35.816	Speed Control Shaft Assembly
95	33.469	Truarc Retaining Ring
96	57-2109-2	#6-32 x 3/16 BHMS St. Stat. Broz. Phillips
97	73-2231-5	#8 Int. Lockwasher Stl. C.P.
98	B-19.961	Speed Control Shaft Detent Spring
99	97-3062	Brake Spring
99A	B-31.335A	Brake Pad, Felt
100	B-32,275-1E	#8-32 H H Shoulder Screw
101	35-834	Idler Lever Assembly
102	73-2238-49	Phenolic Washer (2 Used)
103	B-33.406-D	Idler Drive Sheave
104	73-2254-6	Felt Washer
105	B-33.418	Truarc Retaining "E" Ring
106	B-28.181	Idler Drive Belt
107	73-2231-5	#8 Int. Lockwasher
108	57-2474-1	#8-32 x 5/16 RHMS Stl. C.P. Phillips
109	B-19.862C	Angle Bracket for Mounting Drive Assembly
110	B-28.163	Linen Washer
111	73-2241-134	Flat Washer 5/16" x .130 x .03 Stl. C.P. (2 Used)
112	B-32.297-B	Brake Drum Shaft
113	C-13.257-1C	Flywheel
114	C-35.823-E	Brake Drum and Bushing Assembly
115	B-19.840G	Steady Bracket
116		#8-32 x 1/4 Allen Head Set Screw Stl.
117	B-28.163	Linen Washer
118	57-2471-1	#8-32 x 1/4 BHMS Stl. C.P.
119		Cable Bracket
120	D-36.154G	Square Type (GI and Alliance) Motor
	D-36.153E	Round Type (Fasco) Motor
121	B-33.418	Truarc Retaining "E" Ring
122	73-2241-143	Flat Washer
123	73-2254-3	Felt Washer
124	C-19.887-1	Fan Blade
125	73-2254-3	Felt Washer
126	73-2241-143	Flat Washer
127	33.415	Push-On Fastener (Presthole)
128	B-33.409	Hairpin Clip
129	B-33.408C	Rubber Bonded Idler Wheel $2\frac{1}{2}$" Dia.
130	B-28.163	Linen Washer
131	B-35.768A	Idler Slide Plate Assembly
132	B-31.327D	Idler Lift Compression Spring
133	57-2474-1	#8-32 x 5/16 RHMS Stl. C.P.
134	73-2231-5	#8 Int. Lockwasher
135	73-2241-74F	#8 Flat Washer Stl. C.P. $\frac{1}{2}$ x .177 x 1/32
136	110-47	Idler-Throw-Out Lever
137	B-32.291-1	Shoulder Washer
138	73-2241-150	Steel Washer
139	51-3182	Shift Plate For High Speed
140	B-33.407-1	"C" Washer
141	57-2109-2	#6-32 x 3/16 Phillips BHMS St. Stat. Brz.
142	B-32.264F	Idler Slide Bushing
143	57-3683-1	#8-32 x 1/4 Undercut Flat Head



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORA

MONITORADIO
MODEL MR-10

TRADE NAME	Monitoradio Model MR-10
MANUFACTURER	Monitoradio Div., I. D. E. A., Inc., 7900 Pendleton Pike, Indianapolis, 26, Ind.
TYPE SET	AC Operated FM Receiver
TUBES (Eight)	Types 6BC5 RF Amplifier, 6U8 Mixer-Osc., 6BJ6 1st. IF Amplifier, 6BJ6 2nd. IF Amplifier, 6AL5 Ratio Det., 12AX7 Squelch-AF Amp., 6AK6 Output, 6X4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .35 Amp. @ 117 Volts AC (36 Watts)
TUNING RANGE- FREQ. MOD.	152-174MC



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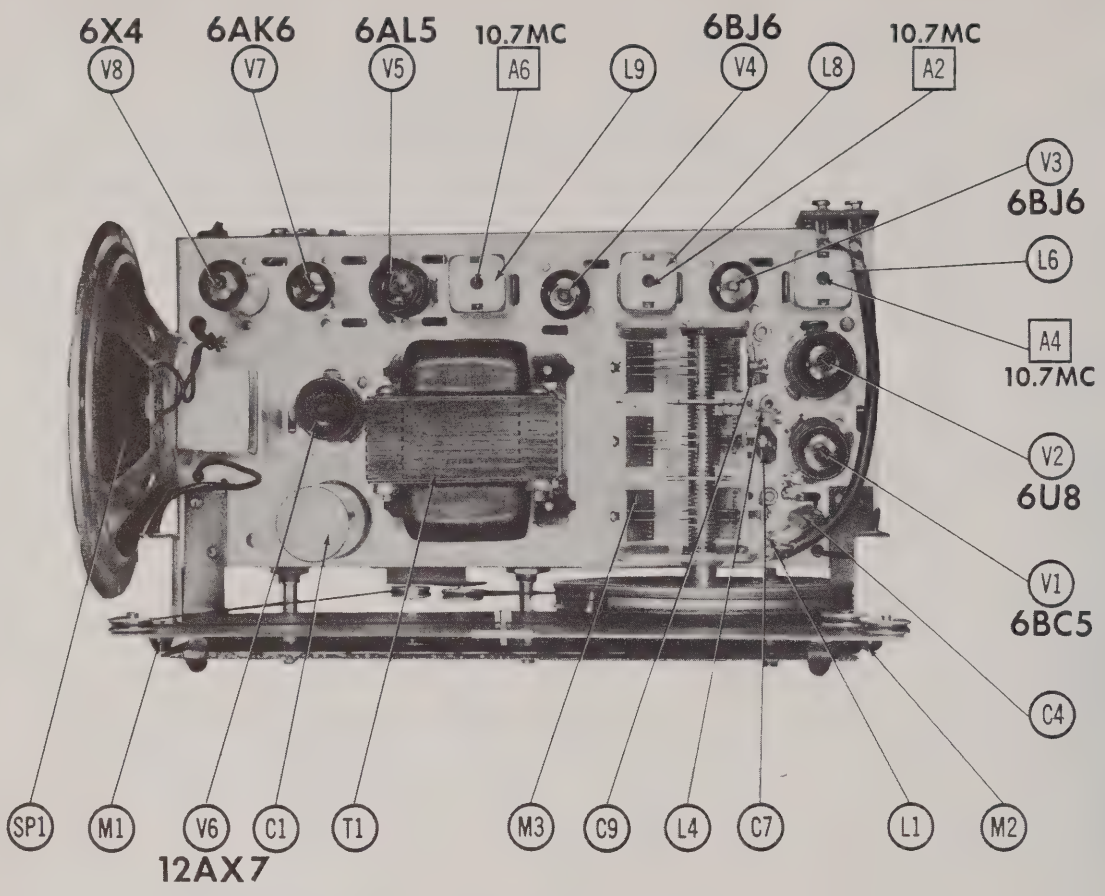
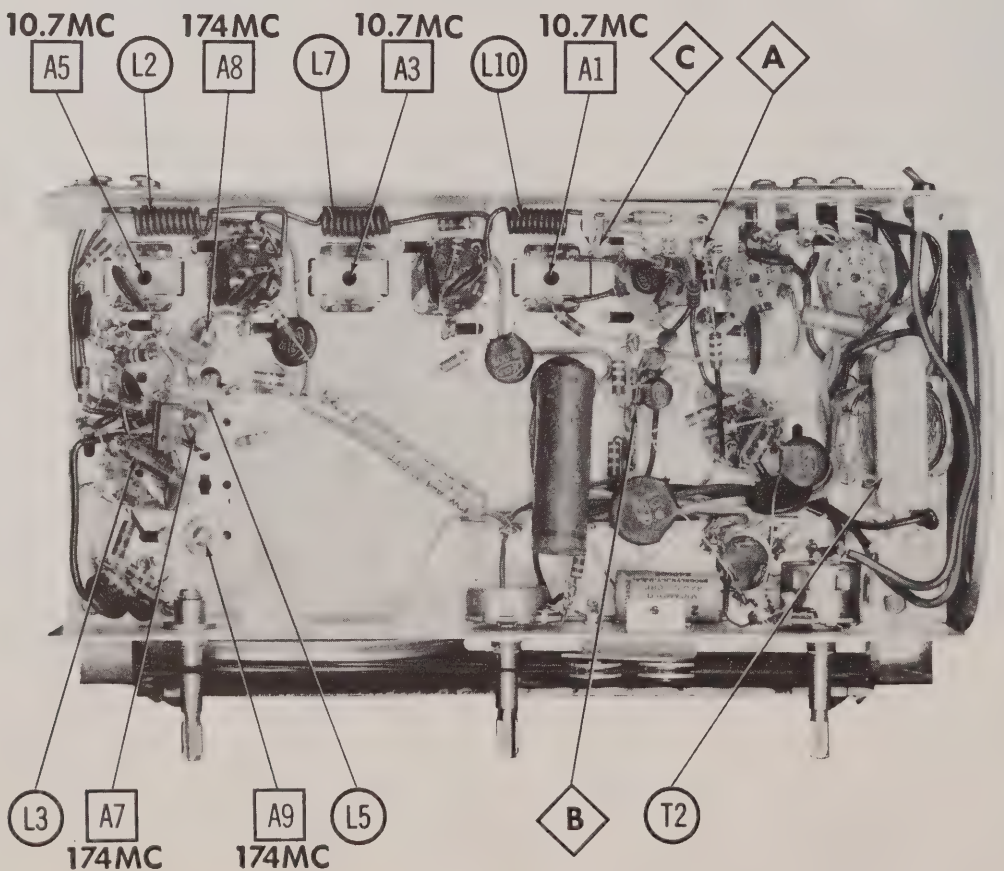


CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW- INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BC5	
V2	Mixer-Oscillator	6U8	
V3	1st. IF Amplifier	6BJ6	
V4	2nd. IF Amplifier	6BJ6	
V5	Ratio Detector	6AL5	
V6	Squelch-AF Amp.	12AX7	
V7	Output	6AK6	
V8	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MONITORADIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	250	300-082-8	AFH3-20	XC0732	FP321	TMT-20	T-090	TVL-3540
B	▲20	250							
C	20	25							
C2	2	50	300-109-1	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301
C3	2	50	300-109-1	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301

FIXED CAPACITORS

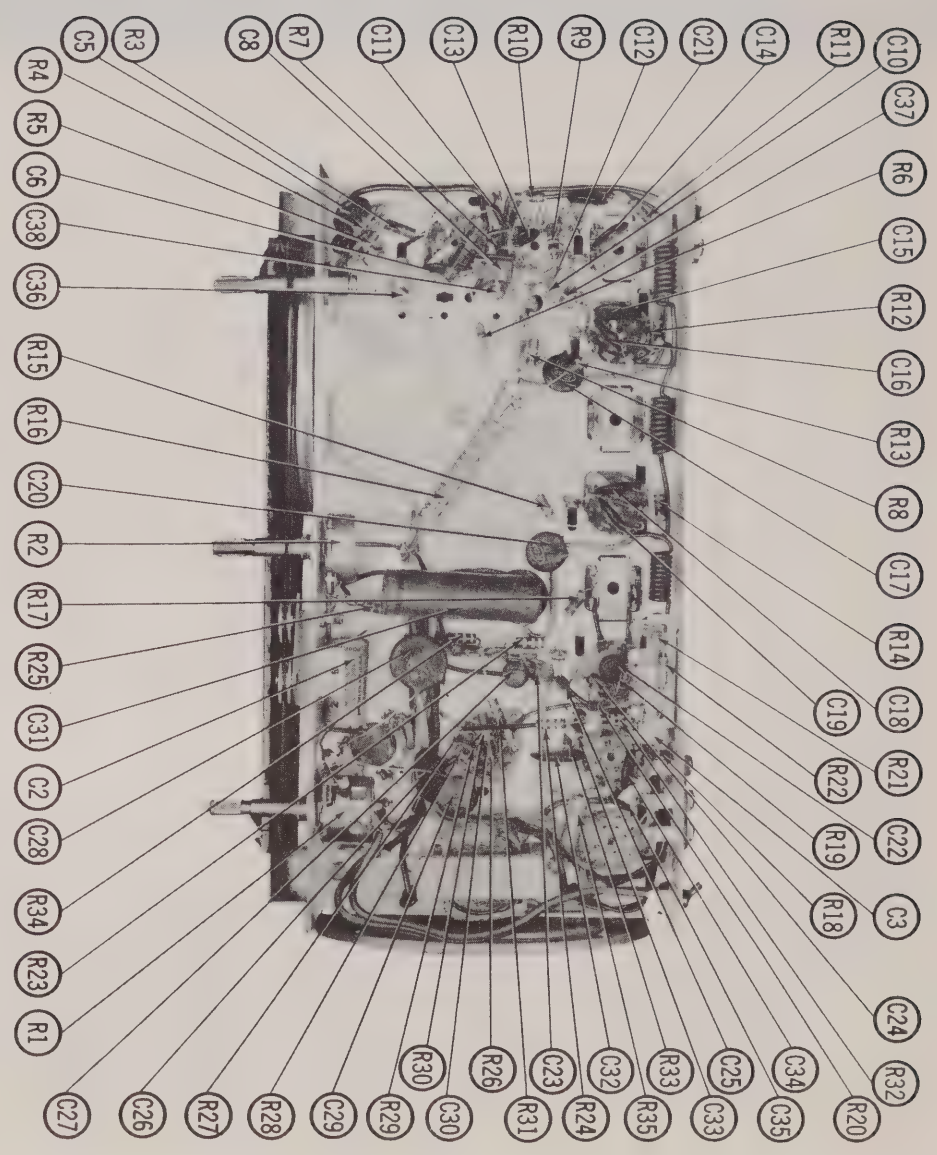
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MONITORADIO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	27	500		1468-000027	D6-270	5W5Q27	ED-27	UC-5427	1FM-427	
C5	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C6	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C7	510	500	300-014-511	1464-00051		5R5T51			MS-351	
C8	15	500	300-014-150	1469-000015		5R5Q15			MS-415	
C9	510	500	300-014-511	1464-00051		5R5T51			MS-351	
C10	15	500	300-014-150	1469-000015	D6-150	5R5Q15			MS-415	
C11	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C12	15		100-203-14							N150
C13	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C14	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C15	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C16	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C17	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C18	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C19	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C20	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C21	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C22	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C23	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C24	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C25	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C26	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C27	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C28	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C29	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C30	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C31	.25	200		P288N-25		CUB2P25		GEM-2025	2TM-P25	
C32	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C33	270			BPD-00027	DD-271	L10T27	ED-270	UC-5327	5GA-T27	
C34	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C35	1000			BPD-001	DD-102	BYA6D1	ED-001	DC521	5HK-D1	
C36	1-6				829-6		532-B			
C37	1-6				829-6		532-B			
C38	1-6				829-6		532-B			

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Monitoradio PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	100-093-8	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not req.	KSS-3	Not req.	Not req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	25K	½	100-093-9	B-27	A47-25K-V	Q14-120	U28	Squelch
B	Shaft			Not req.	KSS-3	Not req.	Not req.	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Monitoradio PART No.	IRC PART No.	
R3	1Meg			BTS-1Meg	
R4	220K			BTS-220K	
R5	470K			BTS-470K	
R6	1000Ω			BTS-1000	
R7	100K			BTS-100K	
R8	10K			BTS-10K	
R9	10K			BTS-10K	
R10	100K			BTS-100K	
R11	470Ω			BTS-470	
R12	82Ω			BTS-82	
R13	470Ω			BTS-470	
R14	82Ω			BTS-82	
R15	470Ω			BTS-470	
R16	2700Ω	4			
R17	68Ω			BTS-68	
R18	8.2Ω 5%	1			
R19	1000Ω			BTS-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Monitoradio PART No.	IRC PART No.	
R20	1500Ω			BTS-1500	
R21	6800Ω			BTS-6800	
R22	6800Ω			BTS-6800	
R23	47K			BTS-47K	
R24	47K			BTS-47K	
R25	47K			BTS-47K	
R26	10K			BTS-10K	
R27	560Ω			BTS-560	
R28	220K			BTS-220K	
R29	2.2Meg			BTS-2.2Meg	
R30	47K			BTS-47K	
R31	220K			BTS-220K	
R32	470K			BTS-470K	
R33	560Ω			BTS-560	
R34	33K			BTS-33K	
R35	270Ω	1		BTA-270	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MONITORADIO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ②.35A	375VCT ②.052A	6.3VAC ② 2.5A		500-160-3				22R28 ①	

①Use Universal Mtg. Brackets

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Monitoradio PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8500Ω	3-4Ω	300-240-1	Z1116	A-2927 ①	A-8114	24S52	S-7X	① Drill new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

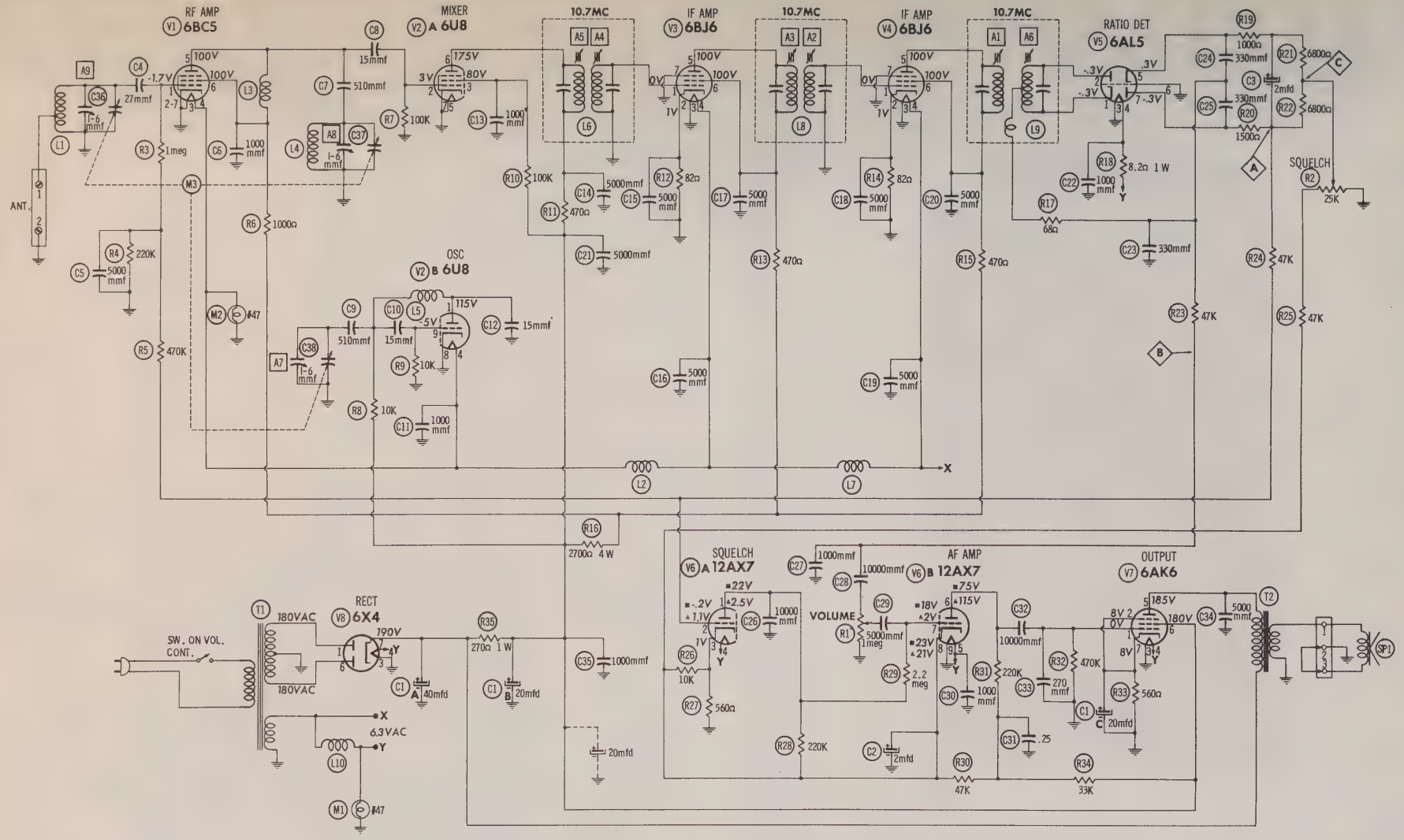
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Monitoradio PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	750B21 ①	5A1	① Alternate Part #300-071-3

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Monitoradio PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	300-459-3				
L2	Fil. Choke	100-710-3	19-1000	BC-561	4602	1.1 Microhenry
L3	RF Plate Choke	300-303-2	19-1002	BC-563	4606	2.1 Microhenries
L4	RF Coil	300-459-2				
L5	Osc. Coil	300-459-1				
L6	Input IF	300-077-2	16-3487	FM-254	1463	
L7	Fil. Choke	100-710-2	19-1000	BC-561	4602	1.1 Microhenry
L8	Output IF	300-077-2	16-3487	FM-254	1463	
L9	Ratio Det.	500-314	17-3498	FM-255	6205	
L10	Fil. Choke	100-710-1	19-1000	BC-561	4602	1.1 Microhenry

MISCELLANEOUS

ITEM No.	PART NAME	MONITORADIO PART No.	NOTES
M1	Dial Light		#47
M2	Dial Light		#47
M3	Tuning Cap.	500-150-3	3 Gang
	Knob	300-531-1	Tuning
	Knob	300-531-2	On-Off-Volume
	Knob	300-531-3	Squelch
	Dial Scale	500-168-2	Glass
	Pointer	300-285-1	



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS (cont)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn volume and squelch controls fully clockwise.
Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. To set pointer, turn tuning capacitor fully closed and set pointer to the extreme end of the low frequency end of dial.

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.001MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	.001MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (±200KC Swp)	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
4.	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A6	Reconnect capacitor C3. Adjust A6 for maximum straightness of diagonal line with 10.7MC marker appearing midway between peaks similar to Fig. 2.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	22Ω Carbon Resistor	High side to antenna terminal #1. Low side to terminal #2.	174	174	DC probe to point Ⓐ. Common to chassis.	A7	Adjust for maximum deflection.
6.	"	"	152	152	"	L5	Compress or expand for maximum deflection. Repeat steps 5 and 6.
7.	"	"	174	174	"	A8, A9	Adjust for maximum deflection.
8.	"	"	152	152	"	L1, L4	Compress or expand coils for maximum deflection. Repeat steps 7 and 8.

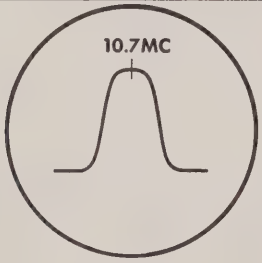

FIG. 1

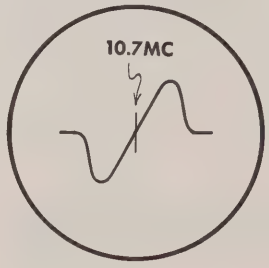

FIG. 2

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC5	1.2meg	0Ω	0Ω	.1Ω	*3.9K	*3.9K	0Ω		
V2	6U8	*10K	100K	*100K	.1Ω	0Ω	*750Ω	0Ω	0Ω	10K
V3	6BJ6	.6Ω	82Ω	0Ω	.1Ω	*3.4K	*3.4K	0Ω		
V4	6BJ6	.6Ω	82Ω	0Ω	.1Ω	*3.4K	*3.4K	0Ω		
V5	6AL5	INF.	INF.	0Ω	3Ω	■7.8K ▲26K	0Ω	■8.2K ▲26K		
V6	12AX7	*330K	■54K ▲70K	560Ω	.1Ω	.1Ω	*220K	2.4meg	10K	0Ω
V7	6AK6	470K	560Ω	0Ω	.1Ω	*330Ω	*270Ω	560Ω		
V8	6X4	90Ω	INF.	0Ω	.1Ω	INF.	85Ω	90K		

* MEASURED FROM PIN 7 OF V8.
■ SQUELCH CONTROL IN FULLY CLOCKWISE POSITION.
▲ SQUELCH CONTROL IN FULLY COUNTER-CLOCKWISE POSITION.

PHOTOFACT* Folder

*TRADE MARK

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MODEL 14P4-1 (Ch. TS423A)

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)

TRADE NAME	Motorola	MODELS	CHASSIS
		14P3-2, 14P4-1, 14P5-1, 14P5-2, 14P5-3	TS-423
		14P4-1	TS-423A
		Y14P3-2, Y14P4-1, Y14P5-1, Y14P5-2, Y14P5-3	TS-423Y
		14P6-1, 14P7-1, 14P7-2, 14P8-1, 14P8-2	TTS-423
		Y14P6-1, Y14P7-1, Y14P7-2, Y14P8-1, Y14P8-2	TTS-423Y
		14P3-1	WTS-423
		Y14P3-1	WTS-423Y

MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Ill.
TYPE SET	Television Receiver
TUBES	Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 120 Watts, 1.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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PHOTOFACT* Folder
*TRADE MARK

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs from the side.
2. Remove 6 metal screws and the rear cover.
3. Remove 2 metal screws and the handle.
4. Remove speaker leads, yoke plug and picture tube socket.
5. Place receiver front down on a pad.
6. Remove 2 chassis bolts from the bottom.
7. Tilt the chassis in to the left, out at the right and remove the HV lead.
8. Remove the chassis.
9. Remove 2 speaker nuts and the speaker.

MODEL 14P4-1 (Ch. TS423A)

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODELS	CHASSIS
14P3-2, 14P4-1, 14P5-1, 14P5-2, 14P5-3	TS-423
14P4-1	TS-423A
Y14P3-2, Y14P4-1, Y14P5-1, Y14P5-2, Y14P5-3	TS-423Y
14P6-1, 14P7-1, 14P7-2, 14P8-1, 14P8-2	TTS-423
Y14P6-1, Y14P7-1, Y14P7-2, Y14P8-1, Y14P8-2	TTS-423Y
14P3-1	WTS-423
Y14P3-1	WTS-423Y

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 13 adjustment is located at 3 o'clock, proceed in a counter clockwise direction adjusting for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

1. Remove 2 metal screws and the handle.
2. Remove 2 metal screws from the bottom along the front edge. NOTE. A special tool, Motorola part #66T742501 may be required.
3. Pull the bottom of the front out and swing up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10 or 6 and 1. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

FUSES

A 3Ω fusible resistor (R88) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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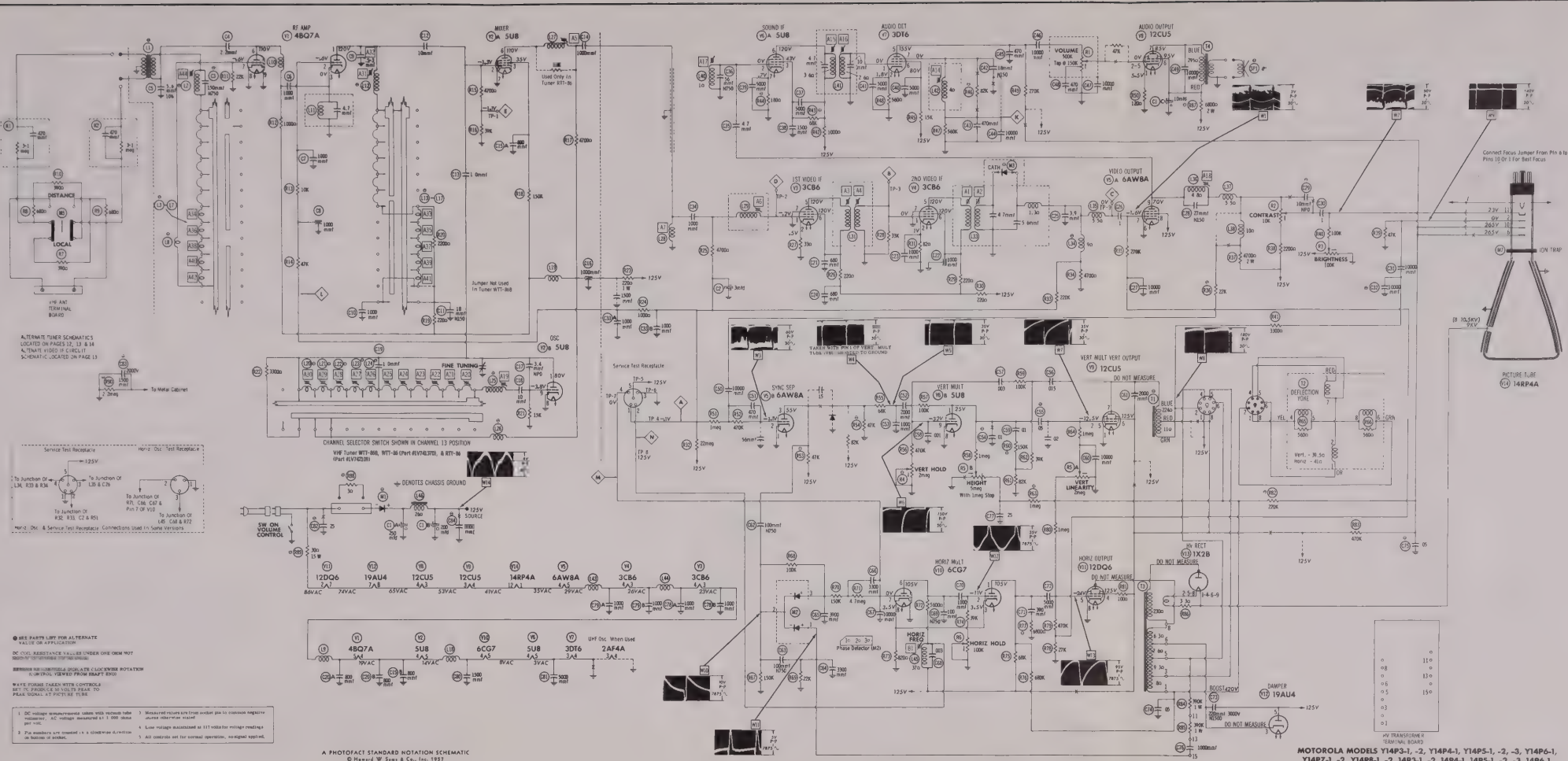
RF AMP V1 4BQ7A
MIXER V2 A 5U8
SOUND IF V6 A 5U8
AUDIO DET V7 3DT6
AUDIO OUTPUT V8 12CU5
1ST VIDEO IF V1 3CB6
2ND VIDEO IF V4 3CB6
VIDEO OUTPUT V5 A 6AW8A
OSC V7 B 5U8
SYNC SEP V5 B 6AW8A
VERT MULT V6 B 5U8
VERT MULT VERT OUTPUT V9 12CU5
HORIZ MULT V10 6CG7
HORIZ OUTPUT V11 12DQ6
HV RECT V13 1X2B
DAMPER V12 19AU4
PICTURE TUBE V14 14RP4A
DISTANCE
LOCAL
CONTRAST
BRIGHTNESS
VOLUME
FINE TUNING
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner WTT-868, WTT-86 (Part #LV742370, & RTT-86 (Part #LV742209)
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
DEFLECTION YOKE
ION TRAP
Connect Focus Jumper From Pin a to Pins 10 Or 1 For Best Focus
Jumper Not Used In Tuner WTT-868
Used Only In Tuner RTT-86
DO NOT MEASURE
ALTERNATE TUNER SCHEMATICS LOCATED ON PAGES 12, 13 & 14
ALTNATE VIDEO IF CIRCUIT SCHEMATIC LOCATED ON PAGE 13
To Metal Cabinet
Service Test Receptacle
Horiz. Osc. Test Receptacle
Horiz. Osc. & Service Test Receptacle Connections Used In Some Versions
12DQ6 19AU4 12CU5 12CU5 14RP4A 6AW8A 3CB6 3CB6
4BQ7A 5U8 6CG7 5U8 3DT6 2AF4A
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC CVOL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN BUT OTHERWISE TOLERANCE ±10%
REFERENCE FOR CONTROLS: FOR LATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 90 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1 000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative source unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, as signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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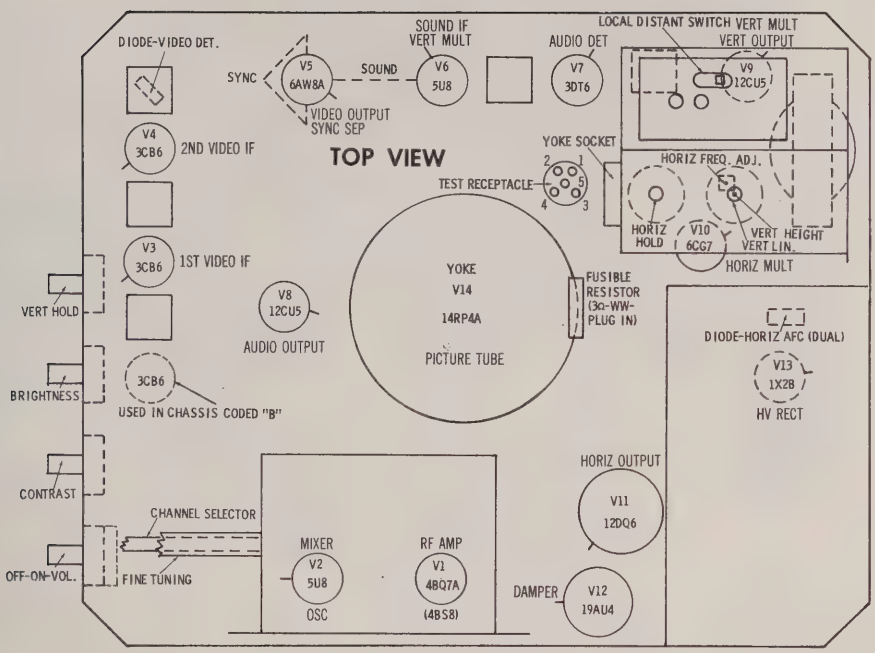
MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)

TUBE PLACEMENT CHART

L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

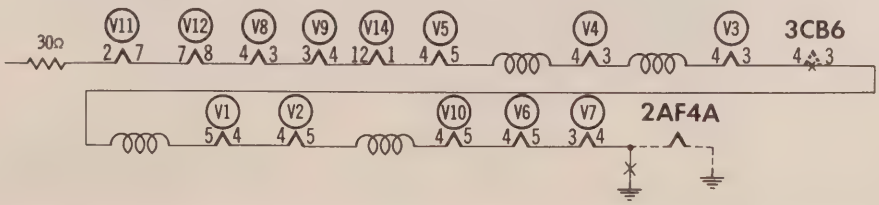
POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R88), Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, Diode (M3), V5, 3rd. Video IF (3CB6) "B" Coded
No pic, no sound, has snow - V1, V2
No pic, has sound, has raster - V5, V14
Has pic, no sound - V6, V7, V8

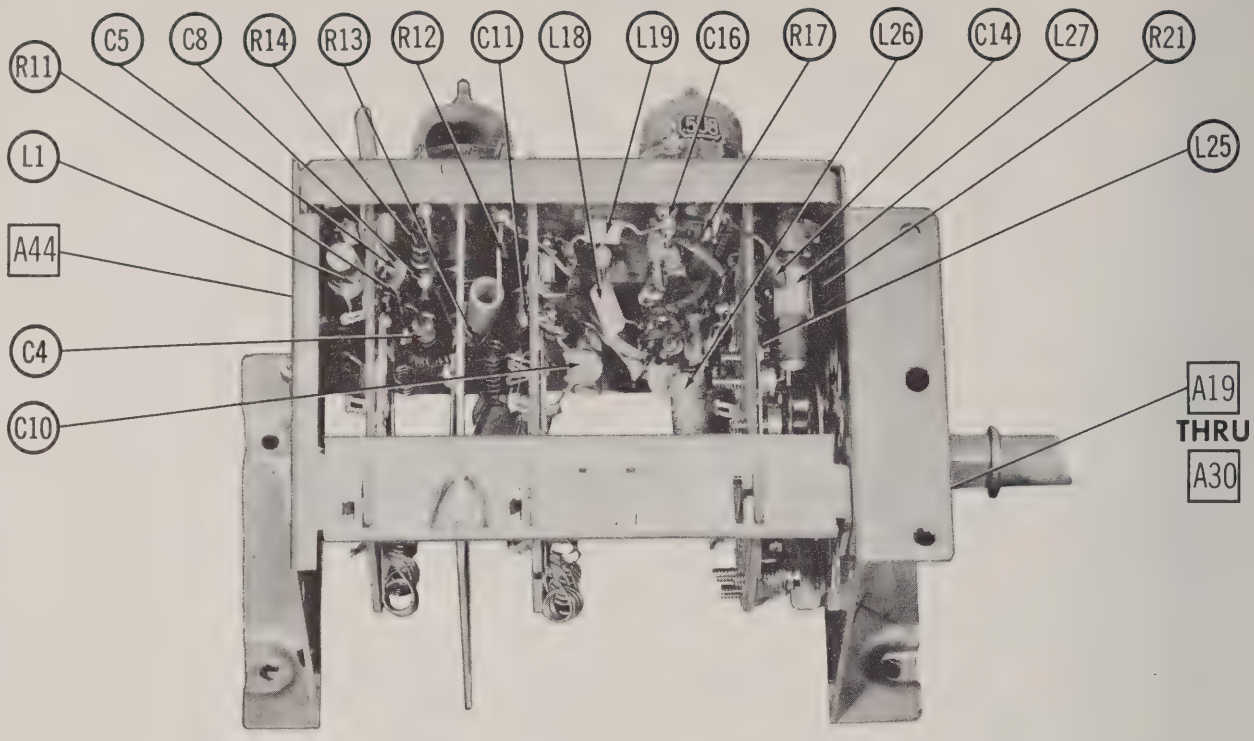
SYNC FAILURE
No vert. sync - V5
No horiz. sync - V5, Diode (M2)
No vert. or horiz. sync - V5

SWEEP FAILURE
No raster, has sound - Diode (M2), V10, V11, V12, V13, V14
No vertical deflection - V6, V9
Poor vert. linearity or foldover - V6, V9
Poor horiz. linearity or foldover - V10, V11, V12
Narrow picture - V10, V11, V12, Rectifier (M1)
Vert. off freq. - V6, V9
Horiz. off freq. - V10

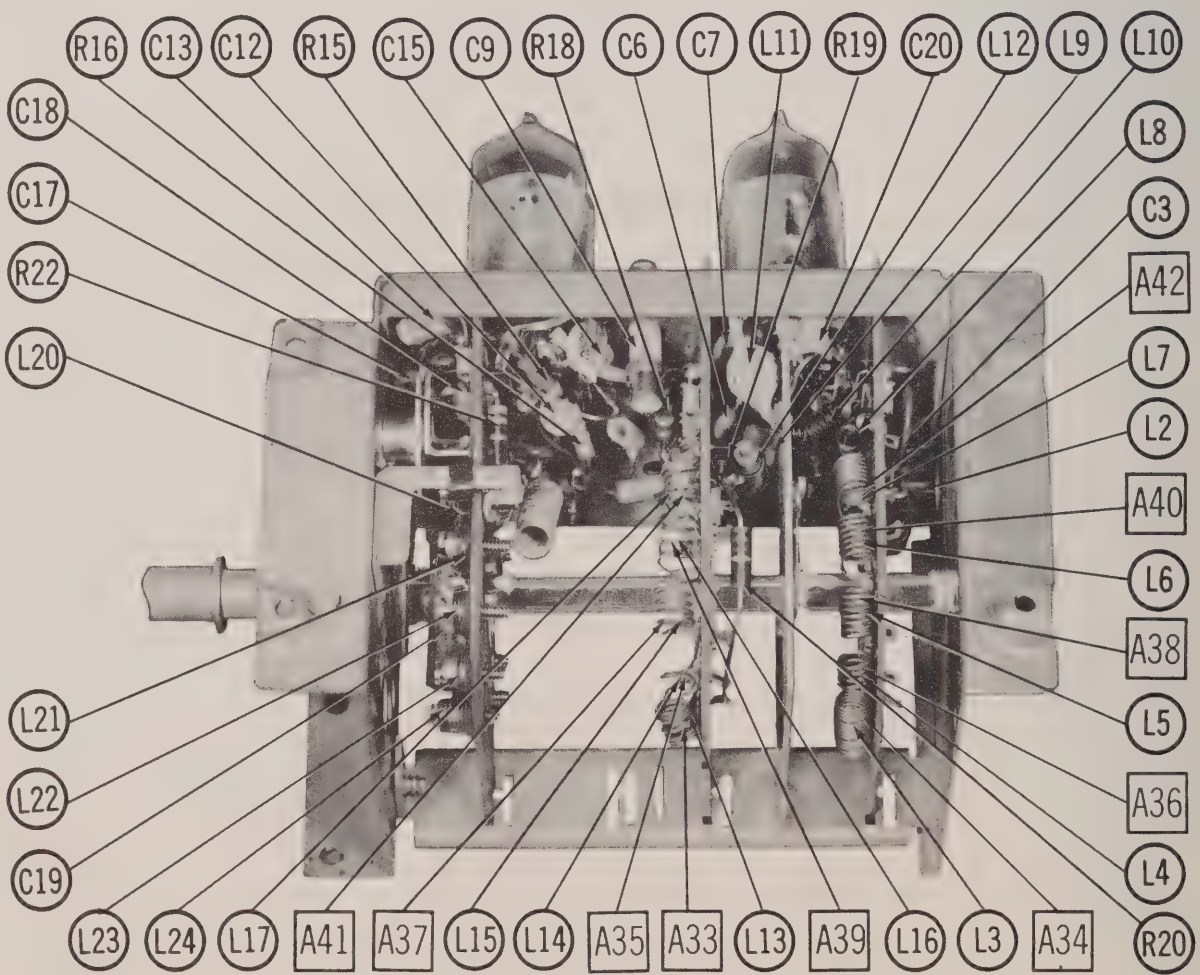
This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



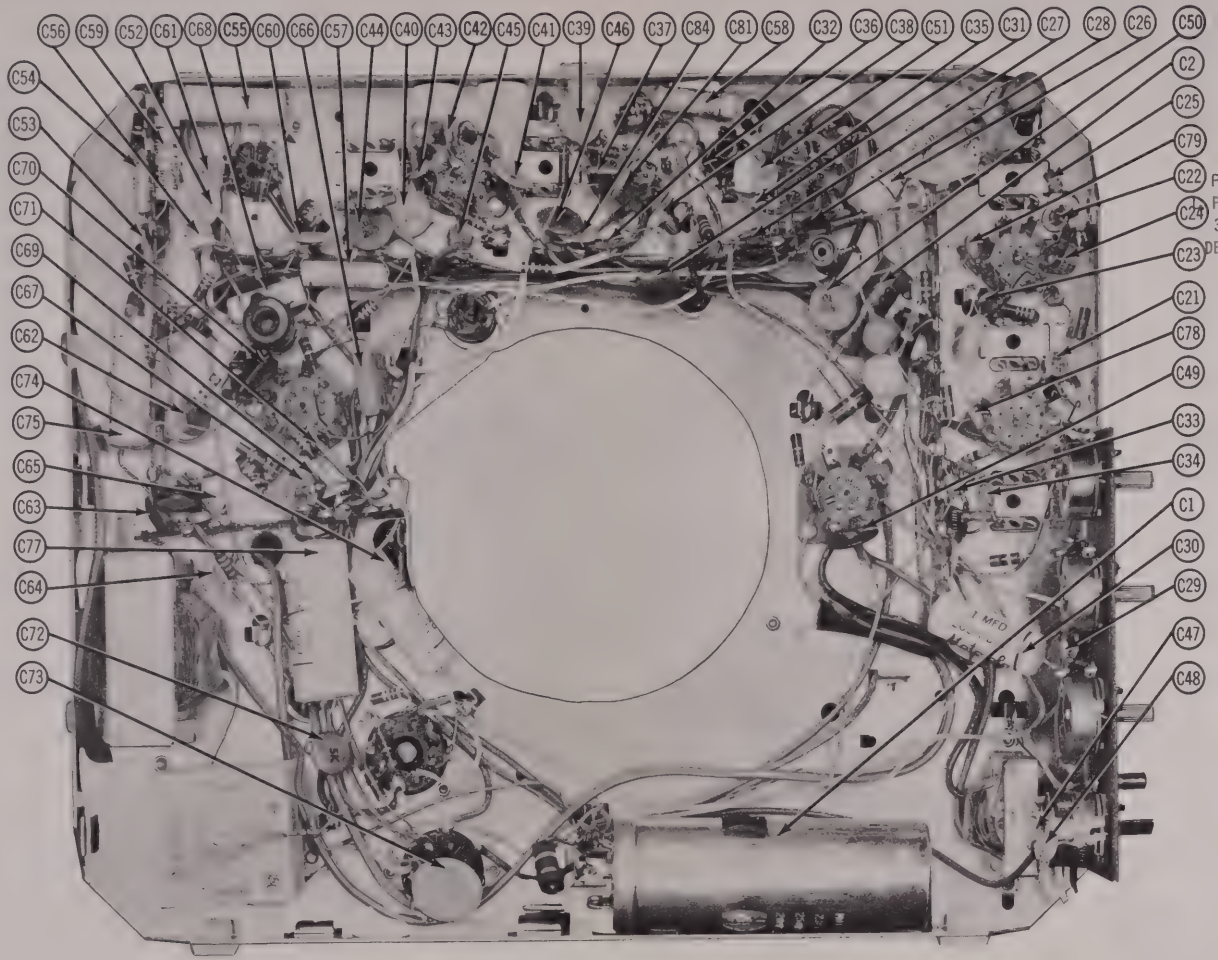
MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TS-423, Y, WTS-423, Y)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Remove deflection yoke plug to eliminate interference from the horizontal sweep circuits.

VIDEO IF ALIGNMENT FOR TS-423 AND WTS-423 CHASSIS (NO CODE OR CODED "A")

Connect the negative lead of a 3 volt bias supply to point ⊖. Positive to chassis.
Disable tuner oscillator by grounding pin 9 (grid) of 8U8 (V3). Turn contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	008MFD	High side to point ⊕. Low side to chassis.	44MC (00MC Swp)	42.25MC 45.75MC	13	Vert. Amp. thru 47K to point ⊖. Low side to chassis.	A1, A2	Starting with slugs (A1 & A2) turned as far apart as possible (just entering coils), adjust for response similar to Fig. 1 with markers as indicated.
2.	"	High side to point ⊕. Low side to chassis.	"	"	"	"	A3, A4	Starting with slugs (A3 and A4) turned as far apart as possible (slugs just entering coils), adjust for response curve similar to Fig. 2 with markers as indicated
3.	"	High side to point ⊕. Low side to chassis.	"	"	"	"	A5, A6, A7	Adjust A5 and A6 for response curve similar to Fig. 3 with markers as indicated. If markers exceed 50% on curve, adjust A7 by expanding coil turns to obtain desired response. Restore mixer-osc. (V2) to normal operation.

VIDEO IF ALIGNMENT FOR TS-423 AND WTS-423 CHASSIS (CODED "B")

Connect the negative lead of a 3 volt bias supply to point ⊖. Positive to chassis.
Disable tuner oscillator by grounding pin 9 (grid) of 8U8 (V3). Turn contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	001MFD	High side to point ⊕. Low side to chassis.	44MC (00MC Swp)	42.25MC 45.75MC	13	Vert. Amp. thru 47K to point ⊖. Low side to chassis.	A8	Adjust for maximum gain and correct 43.25MC marker position as in Fig. 4.
5.	"	"	"	"	"	"	A9	Adjust for maximum gain and correct 45.75MC marker position as in Fig. 4.
6.	"	"	"	"	"	"	A10	Adjust for flat response of curve (Fig. 4).
7.	"	High side to point ⊕. Low side to chassis.	"	42.25MC 45.75MC	"	"	A11, A12	Adjust for maximum gain with markers as shown in Fig. 5.
8.	"	"	"	41.25MC	"	"	A13	Adjust to place marker in trap notch as in Fig. 5. Restore mixer-osc. (V2) to normal operation.

SOUND IF ALIGNMENT (FOR STRONG SIGNAL AREAS)

Connect the DC probe of the VTVM to point ⊖. Common to chassis. Switch VTVM to measure negative voltage.
Connect the antenna and tune in a TV station. Turn contrast control fully clockwise.
Set the volume control to normal volume. Adjust A14 for maximum deflection on the VTVM. There are two points of adjustment which will produce a high indication. Use the one which produces the higher reading. After the correct tuning point has been located, make a final adjustment of A14 adjusting for MINIMUM sound distortion. Reduce the signal input, by removing the antenna connection or connecting an attenuator between the antenna lead and the antenna connection, until the picture has become considerably weakened. Adjust A15 and A16 for best signal to noise ratio as determined by ear. Make this adjustment by starting with the cores turned farthest apart (cores just entering coils). Adjust A17 for best signal to noise ratio as determined by ear.
If necessary repeat complete sound alignment.

SOUND IF ALIGNMENT (FOR WEAK SIGNAL AREAS)

Connect the DC probe of the VTVM to point ⊖. Common to chassis. Switch the VTVM to measure negative voltage. Connect the antenna and tune in a TV station. Turn contrast control fully clockwise. Set volume control for normal volume.
Using the maximum available signal, make a rough adjustment of A15, A16, A17 and A14 for maximum deflection on VTVM. If two peaks appear, use one producing the highest reading on the VTVM.
Retouch A14 for MINIMUM sound distortion.
Using the weakest signal available, retouch A15, A16 and A17 for best signal to noise ratio.
If necessary, repeat above procedure several times.

4.5MC TRAP ALIGNMENT

Tune in a TV station (local) and advance the contrast control. Turn "Local-Distant" switch to distant position. Adjust the fine tuning until the 4.5MC beat interference can be seen in the picture. Adjust A18 to find the two points at which the sound beat is just noticeable in the picture. Adjust the core between these two points, using the least amount of inductance (the core furthest out of the coil), for no beat interference.

VHF OSCILLATOR ALIGNMENT

Connect a clip lead from point ⊖ to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Adjust generator to provide .7 to 1 volt peak to peak pattern on the scope.
Set the fine tuning control to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (00MC Swp)	211.25MC	13	Vert. Amp. thru 47K to point ⊖. Low side to chassis	A19	Adjust to place video marker at 50% as in Fig. 6.
			207MC (00MC Swp)	205.25MC	13		A20	
			201MC (00MC Swp)	199.25MC	11		A21	
			195MC (00MC Swp)	193.25MC	10		A22	
			189MC (00MC Swp)	187.25MC	9		A23	
			183MC (00MC Swp)	181.25MC	8		A24	
			177MC (00MC Swp)	175.25MC	7		A25	
			85MC (00MC Swp)	83.25MC	6		A26	
			79MC (00MC Swp)	77.25MC	5		A27	
			73MC (00MC Swp)	71.25MC	4		A28	
			67MC (00MC Swp)	65.25MC	3		A29	
			57MC (00MC Swp)	55.25MC	2		A30	

FIG. 1

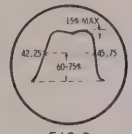


FIG. 2

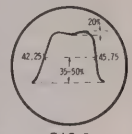


FIG. 3

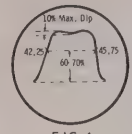


FIG. 4

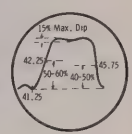


FIG. 5

FIG. 6

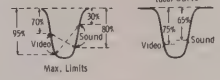


FIG. 7

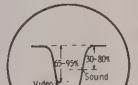


FIG 8

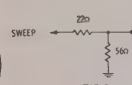


FIG.9

FIG 10

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point ⊖ to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Preset A44 by turning clockwise until its effect is out of the tuner's bandpass on channel 2.
Preset A33 by turning until top of screw is approximately 1/4 inch above tuner chassis. This will place adjustment at center of its range.
Preset A31 to place slug approximately half way out of coil.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (00MC Swp)	211.25MC 218.75MC	13	Vert. Amp. thru 47K to point ⊖. Low side to chassis.	A31	Adjust for maximum amplitude of response curve similar to Fig. 7.
11.	"	"	177MC (00MC Swp)	175.25MC 179.75MC	7	"	A32	Adjust for response curve similar to Fig. 7 with markers as shown. Repeat steps 10 and 11 if necessary to obtain desired response. If markers fall too low on response curve of tuners VT784 or VT784Y, twist one lead of capacitor (A43) and adjust by compressing or expanding coil turn of this loop.
12.	"	"	85MC (00MC Swp)	83.25MC 87.75MC	6	"	A33, A34	Adjust in sequence, first adjustment for proper marker position; second adjustment for maximum gain and proper tilt. (See Fig. 8).
13.	"	"	79MC (00MC Swp)	77.25MC 81.75MC	5	"	A35, A36	"
14.	"	"	69MC (00MC Swp)	67.25MC 71.75MC	4	"	A37, A38	"
15.	"	"	63MC (00MC Swp)	61.25MC 65.75MC	3	"	A39, A40	"
16.	"	"	57MC (00MC Swp)	55.25MC 59.75MC	2	"	A41, A42	"

IF TRAP ALIGNMENT

Connect a clip lead from point ⊖ to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Adjust generator to provide .7 to 1 volt peak to peak pattern on the scope.
Set fine tuning control to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	44MC (00MC Swp)	44MC	2	Vert. Amp. thru 47K to point ⊖. Low side to chassis.	A44	Adjust for MINIMUM amplitude.

UHF IF ALIGNMENT

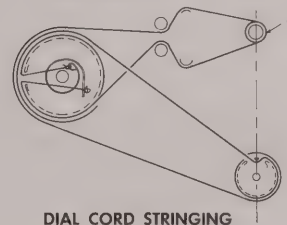
Unplug the UHF tuner's output cable from the VHF tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Fig. 9	High side thru matching network (Fig. 9) to UHF input receptacle. Low side to tuner chassis.	44MC (00MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point ⊖. Low side to chassis.	A45, A46	Adjust by expanding or compressing coil turns. Adjust A45 for proper marker positions and A46 for maximum gain and proper tilt. (See Fig. 10).

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

START RE-STRINGING WITH LARGE UHF PULLEY IN MAX. COUNTER-CLOCKWISE POSITION (AS VIEWED FROM FRONT OF TUNER.)



DIAL CORD STRINGING

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TS-423-1, Y, WTS-423, Y)

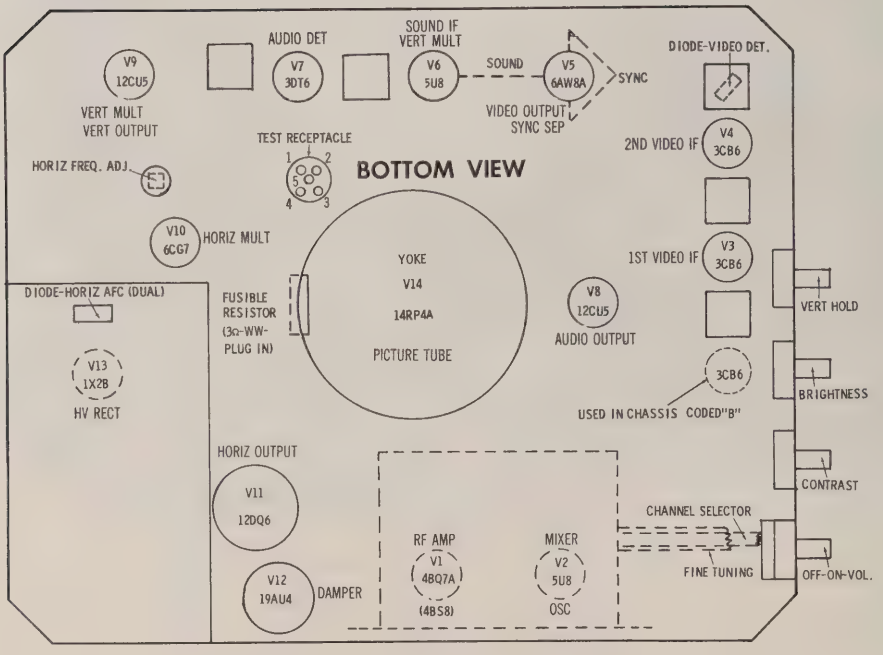
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)

RESISTANCE MEASUREMENTS

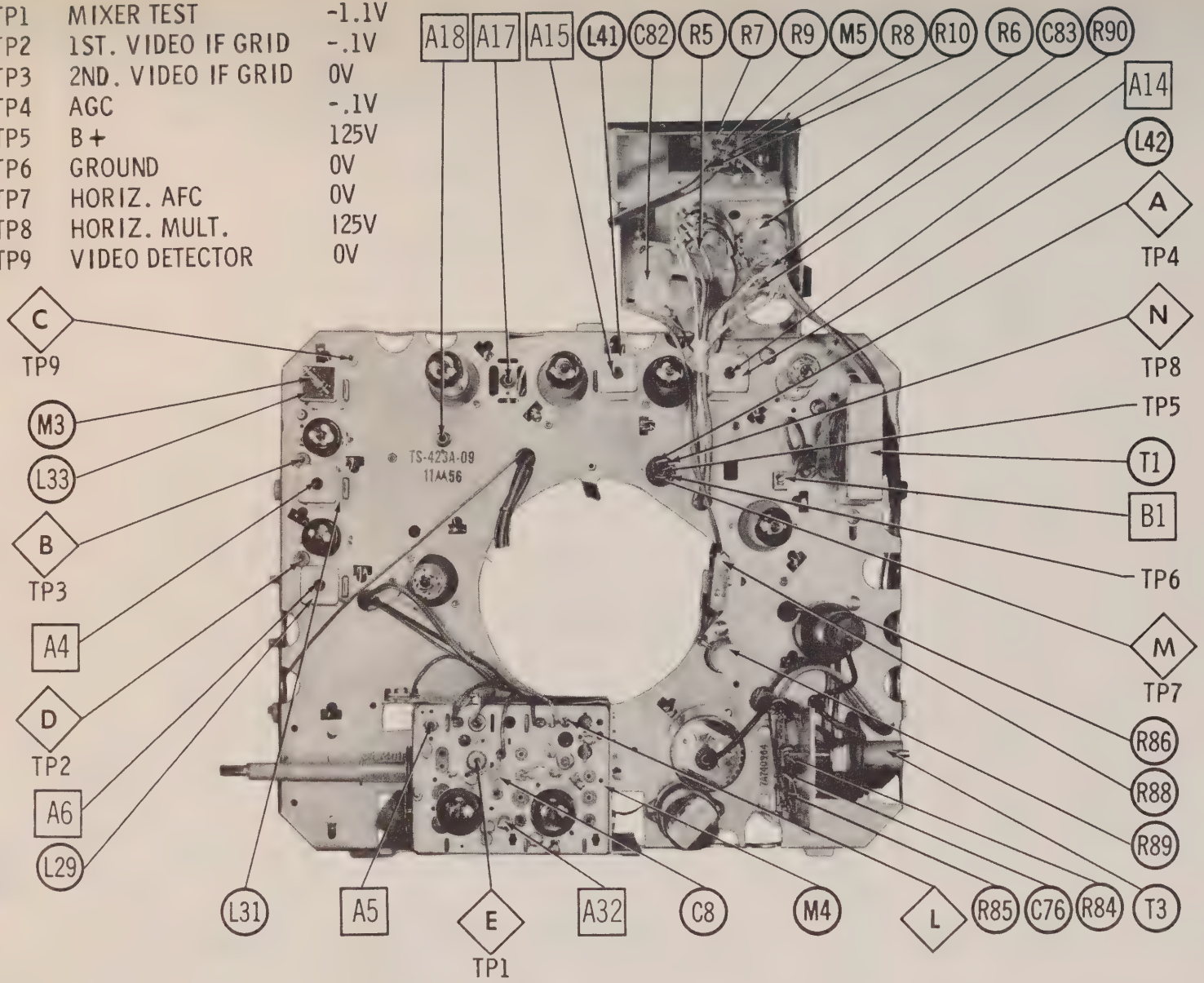
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BQ7A	†460Ω	250K	1Ω	4.5Ω	5.5Ω	†1400Ω	22K	0Ω	0Ω
V2	5U8	†3500Ω	40K	†150K	4.5Ω	3.5Ω	†4900Ω	0Ω	0Ω	15K
V3	3CB6	150K	33Ω	5.5Ω	6.5Ω	†460Ω	†460Ω	0Ω		
V4	3CB6	.1Ω	82Ω	6.5Ω	7.5Ω	†460Ω	†460Ω	0Ω		
V5	6AW8A	0Ω	1.7Meg	†47K	8.5Ω	7.5Ω	0Ω	300K	†26Ω	†3000Ω
V6	5U8	• ‡2.7meg	1Ω	†69K	2Ω	1Ω	†1000Ω	180Ω	0Ω	• 950K
V7	3DT6	2.6Ω	560Ω	1Ω	0Ω	‡490K	†15K	560K		
V8	12CU5	120Ω	0Ω	12Ω	14Ω	0Ω	†6800Ω	†7100Ω		
V9	12CU5	0Ω	• 1.8Meg	12Ω	10Ω	•1.8Meg	†26Ω	†260Ω		
V10	6CG7	‡68K	• 130K	820Ω	3.5Ω	2Ω	†5600Ω	5Meg	820Ω	0Ω
V11	12DQ6	TP	20Ω	TP	†125Ω	•380K	TP	17Ω	0Ω	TOP CAP ‡6Ω
V12	19AU4	NC	NC	¶	NC	†26Ω	TP	17Ω	14Ω	
V13	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡235Ω
V14	14RP4A	8.5Ω	47K	PIN 6 ‡180K	PIN10 ‡180K	PIN 11 • 110K	PIN 12 10Ω			

† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V12.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

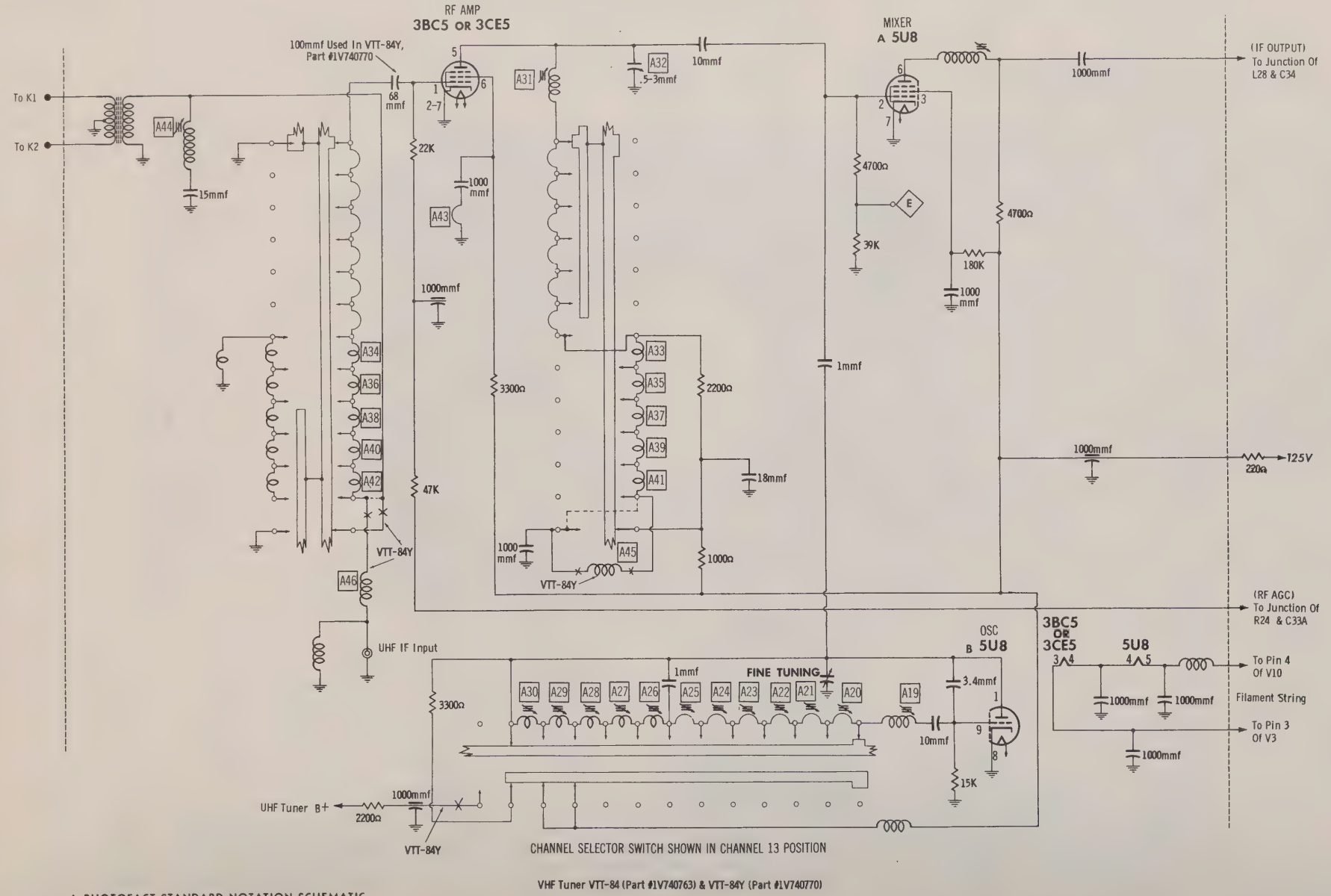
TP1	MIXER TEST	-1.1V
TP2	1ST. VIDEO IF GRID	-.1V
TP3	2ND. VIDEO IF GRID	0V
TP4	AGC	-.1V
TP5	B+	125V
TP6	GROUND	0V
TP7	HORIZ. AFC	0V
TP8	HORIZ. MULT.	125V
TP9	VIDEO DETECTOR	0V



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CHASSIS TOP VIEW

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)



VHF Tuner VTT-84 (Part #1V740763) & VTT-84Y (Part #1V740770)

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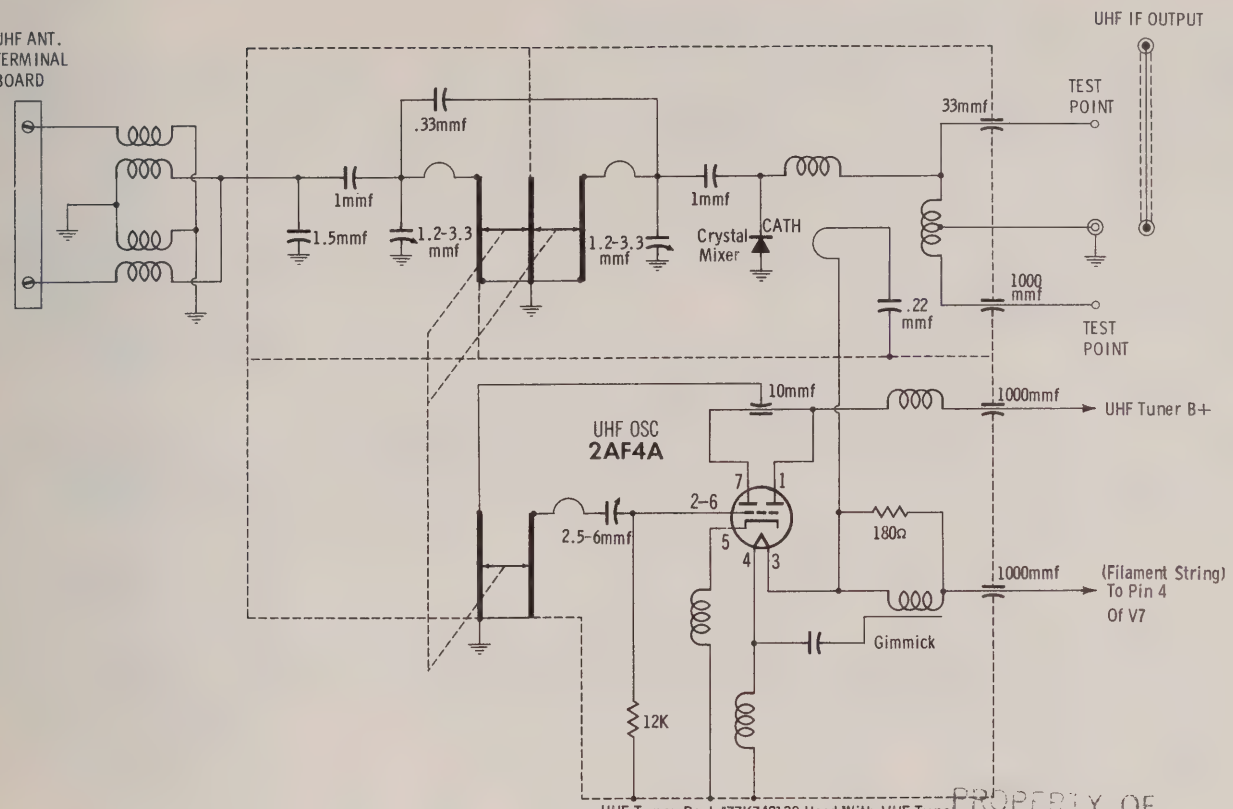
ALTERNATE TUNER SCHEMATIC



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ALTERNATE TUNER SCHEMATIC

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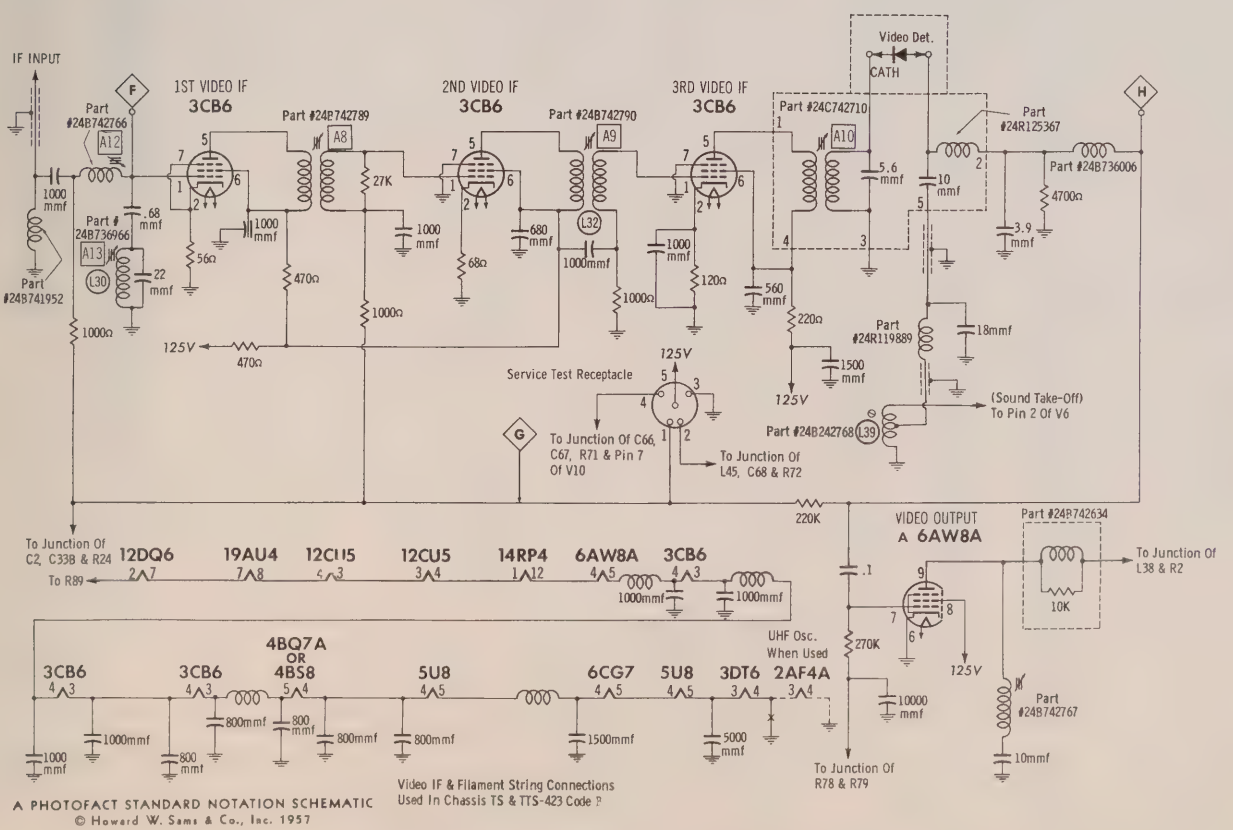

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ALTERNATE VIDEO IF CIRCUIT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	4BQ7A	Note 1
V2	Mixer-Oscillator	5U8	
V3	1st Video IF Amplifier	3CB6	
V4	2nd. Video IF Amplifier	3CB6	
V5	Video Output-Sync Sep	6AW8A	
V6	Sound IF-Vert Mult	5U8	
V7	Audio Detector	3DT6	
V8	Audio Output	12CU5	
V9	Vert. Mult.-Vert.Output	12CU5	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	12DQ6	
V12	Damper	1V3A	
V13	HV Rectifier	1X2B	

Note 1. In some versions a 4BS8 may be used.

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	MOTOROLA PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V14	14RP4A	14RP4A 1 14RP4	14RP4A 1 14RP4	1 Aluminized 2 Silver screen 85°

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	MOTOROLA PART No	AEROVOX PART No.	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	≋350	150	23 BT40590	PR3-012		WT330	TMT-185 TD-350-180	0-095 MT-1512	TVL-4440
B	≋200	150							
C	≋0	350							
C8	3	50	23 AS90643	SRE50V3	BBR4-50	TC302	TD-4-50	MT-0504	TVA-1303

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	MOTOROLA PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	MALLORY PART No	SPRAGUE PART No		
C3	150		21R124508	NT50-81 150	TCN-150	C10T15U	TCT-150		5TCU-T15	NT50 1
C4	2.2		21R15946	NP0-81 2.2	TCN-2R2	C10V22C	TCV-2.2		5TCCB-V22	
C5	5.6		21A73738							10%
C6	1000		21R15396	BPD-001	BPD-101	BYA5DI	ED-1000	DC521	5HK-DI	
C7	1000		21R15396	BPD-001	BPD-101	BYA5DI	ED-1000	DC521	5HK-DI	
C8	1000		21A73932	EF-001	MFT-1000				503C-DI	
C9	5-2		21A73585		RZB-3		31U5-D	CT585A		
C10	1000		21R15396	BPD-001	BPD-101	BYA5DI	ED-1000	DC521	5HK-DI	
C11	10		21R120578							N150
C12	10		21R124579	BPD-00001	DD-100	L10QI	ED-10	UC-541	5GA-QI	
C13	1.0		21R14971	NP0-81 1.0	TCZ-1		TCO-1		5TCCB-V1	
C14	1000		21R15396	BPD-001	BPD-101	BYA5DI	ED-1000	DC521	5HK-DI	
C15A	600		21R400943	BPD-2X001	DD2-102	BYC5DDI	ED2-001	DCD521	5HK-2DI	
B	500									
C16	3		21A73932	EF-001	MFT-1000				503C-DI	
C17	3 4		21R134489	NP0-81 3 3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5S33	5TCCB-V33	NP0
C18	10		21R134710	BPD-00001	DD-100	L10QI	ED-10	UC-541	5GA-QI	
C19	1.0		21R124552	NP0-81 1.0	TCZ-1		TCO-1		5TCCB-V1	
C20A	800		21R400943	BPD-2X001	DD2-102	BYC5DDI	ED2-001	DCD521	5HK-2DI	
B	800									
C21	680		21R40124	BPD-00068	DD-681	L10T68	ED-680	UC-5268	5GA-T68	
C22	1000		21A73748	BPD-001	BPD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C23	1000		21R15396	BPD-001	BPD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C24	680		21R40124	BPD-00068	DD-681	L10T68	ED-680	UC-5268	5GA-T68	
C25	3 9		21R15963							
C26	.1	200	6R121573	P288N-1	DF-104	CUB2PI		GEM-201	2TM-PI	
C27	10000		21R483725	BPD-005	DD-103	BYA6DI	ED-01	DC511	5HK-6I	
C28	27		21R119946							N150
C29	10		21R124579	NP0-81 10	TCZ-10	L10Q	ED-10	UC-541	5GA-QI	NP0 2
C30	.1	200	6R121573	P288N-1	DF-104	CUB2PI		GEM-201	2TM-PI	
C31	10000		21R12946	BPD-01	BPD-103	BYA6DI	ED-01	DC511	5HK-6I	
C32	10000		21R12946	BPD-01	BPD-103	BYA6DI	ED-01	DC511	5HK-6I	
C33 A	1000		21R400927	BPD-2X001	DD2-102	BYC5DDI	ED2-001	DCD521	5HK-2DI	
B	1000									
C34	1000		21R40127	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C35	6.7		21R135264	NP0-81 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5S47	5TCCB-V47	
C36	68		21R134473	NT50-81 56	TCN-56	C10Q56U	TCT-56		5TCU-Q56	N750
C37	5000		21R125403	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-D5	
C38	1500		21R124598	BPD-002	DD-152	BYA10DS	ED-005	DC525	5HK-D5	
C39	5000		21R125403	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-D5	
C40	5000		21R125403	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-D5	
C41	5000		21R125403	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-D5	
C42	15		21R120578							N150
C43	470		21R121797	BPD-00047	DD-471	BYA10P47	ED-470	UC-5347	5GA-T47	
C44	10000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C45	470		21R40121	BPD-00047	DD-471	BYA10P47	ED-470	UC-5347	5GA-T47	
C46	10000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C47	10000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C48	470		21R40121	BPD-00047	DD-471	BYA10P47	ED-470	UC-5347	5GA-T47	
C49	10000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C50	10000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C51	470		21R40121	BPD-00047	DD-471	BYA10P47	ED-470	UC-5347	5GA-T47	
C52	1000		21R12946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C53	1000		21R40127	BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C54	01	400		BPD-01	DD-103	CUB4S	GP-10000	GEM-6I5	6TM-S5	
C55	.05	200	6R121567	BPD-05	DF-503	CUB6S		GEM-5I5	5TM-S5	
C56	.015	200	6R122256	BPD-01	DD-103	CUB2BS	GP-10000	GEM-2I5	2TM-S15	
C57	.0033	200	6R74019I	BPD-003	DD-332	CUB2DS	GP-3300	GEM-223	2TM-D3	
C58	.001	200	6R74019D	BPD-001	DD-102	CUB2ID	GP-1000	GEM-122	2TM-DI	
C59	.01	400	6R121256	BPD-01	DF-104	CUB4S	GP-10000	GEM-4I5	4TM-S5	
C60	10000		21R121946	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C61	3000		21R125165	BPD-002	DD-303	BYA10D3	ED-002	DC532	5HK-D2	
C62	100		21R40057I	NT50-81 100	TCN-100	C10T1U	TCT-100		5TCU-T1	N750
C63	100		21R40053I	NT50-81 100	TCN-100	C10T1U	TCT-100	NT-53I	5TCU-T1	N750
C64	3900		21R120422	BPD-003	DK-332	BYA10D3	ED-0033	UC-5253	5GA-U33	
C65	3900		21R325153	BPD-004	DK-402	BYA10D4	ED-004	UC-524	5HK-04	
C66	3300		21R120422	BPD-0033	DK-332	BYA10D3	ED-0033	UC-5253	5GA-U33	
C67	10000	200	6R74019I	BPD-01	DD-103	BYA6BI	ED-01	DC511	5HK-6I	
C68	.003	200	6R74019D	BPD-003	DD-302	CUB2ID	GP-3000	GEM-223	2TM-D3	
C69	100		21R40057I	NT50-81 100	TCN-100	C10T1U	TCT-100	NT-53I	5TCU-T1	N750
C70	1000		21R6653	1464-00009		1R5DI		MS-21	1HK-DI	
C71	390		21R735757	1464-00035		5R5T39		MS-339	5TM-S39	
C72	5000		21R115312	BPD-005	DD-502	BYA10DS	ED-005	DC525	5HK-D5	
C73	220	3000	21R125168							N1500
C74	.05	600	6R122185	BPD-05	DF-503	CUB6S		GEM-5I5	6TM-S5	
C75	.05	600	6R122185	BPD-05	DF-503	CUB6S		GEM-5I5	6TM-S5	6
C76	1000	600	21R115396	BPD-001	BPD-103	BYA6DI	ED-1000	DC521	5HK-DI	
C77	.25	600	6R122264	P688N-25		CUB6P25		GEM-6025	6TM-P25	

ITEM No	RATING		REPLACEMENT DATA				NOTES
	CAP	VOLT	MOTOROLA PART No	AEROVOX PART No.	CENTRALAB PART No	CORNELL DUBILIER PART No	
C78A	1000		21R400927	BPD-2X001	DD2-102	BYC5DDI	
B	1000		21R400927	BPD-2X001	DD2-102	BYC5DDI	
C78A	1000		21R123498	BPD-0015	DD-152	BYA10DS	
B	1500		21R115312	BPD-005	DD-502	BYA10DS	
C80	1500			P488N-25		CUB4P25	
C81	5000					DD50 152	
C82	25	400				DD 502	
C83	1500	2000	21R115312	BPD-005		BYA10DS	
C84	5000						

ITEM No	REPLACEMENT DATA			NOTES
	ERIE PART No	MALLORY PART No.	SPRAGUE PART No	
C78A	ED2-001	DCD521	5HK-2DI	
B	ED2-001	DCD521	5HK-2DI	
C80	ED-005	DC525	5HK-D5	
C81	ED-005	DC525	5HK-D5	
C82		GEM 4025	4TM-P25	
C83	ED-005	DC3D25		
C84	ED-005	DC525	5HK-D5	

1 Chassis coded "A-1I" and higher use a 18MMF in this application.
2 Not used in Chassis TS-423B and TTS-423B.
3 In chassis coded "A-03" an .05MFD paper tube @ 600V (part #3R122188) is used.
4 Not used in a chassis with a coding lower than "A-09".
5 Chassis coded lower than "A-09" use an .03MFD (Part #3R122166) in this application.
Some versions use an .01MFD in this application.
6 Not used in a chassis with a coding lower than "A-03".
7 Not used in some versions.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA						INSTALLATION NOTES
	RESIST ANCE	WATTS	MOTOROLA PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No		
R1A	500K	1	18A740790	BT-07 *	A47P3-500K*	Q3-133X *	UT630 *		Volume - Tap @ 150K
B	Shaft			Not Req.	P3-3	Not Req.	Not Req.		
C	Switch			KB-1	SWS-12	T6-1	UB-38		
R2A	10K	1	18K74123	B-14 *	A47-10K-S*	Q3-116 *	TA14L		Contrast
B	Shaft			Not Req.	KBB-3	Not Req.	Not Req.		
R3A	100K	1	18C740680	B-40 *	A47-100K-S*	Q3-129 *	TA15L		Brightness
B	Shaft			Not Req.	KBB-3	Not Req.	Not Req.		
R4A	1Meg	1	18K740682	B-75 *	A47-1Meg-S*	Q3-139 *	TA20L		Vert. Hold
B	Shaft			Not Req.	KBB-3	Not Req.	Not Req.		
R5A	1Meg	1	18M74530	F1-67		F1-67			Vert. Lin.
B	5Meg		ERIE	R2-53 a		R2-53 a			Height with 1Meg stop
R6A	100K	1	18K74682	AB-40	A47-100K-S	Q3-138	PT-A1AL		Horiz. Hold
B	Shaft			AE-19	RN-3	TQ	Not Req.		

* Use extra mounting nut behind panel.
a Concentrikit Equivalent, K-5 Kit, Base Elements & Shafts, BU-139, P9-01 (Panel)
BU-141, RU-018 (Rear)a

a Use 1Meg resistor in series with the right hand terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No	IRC PART No	
R7	390Ω		6R5554	BTS-390	
R8	680Ω		6R6040	BTS-680	
R9	680Ω		6R6040	BTS-680	
R10	390Ω		6R5554	BTS-390	
R11	22K		6R6028	BTS-22K	
R12	1000Ω		6R6229	BTS-1000	
R13	10K		6R6054	BTS-10K	
R14	47K		6R6056	BTS-47K	
R15	4700Ω		6R6039	BTS-4700	
R16	39K		6R6047	BTS-39K	
R17	4700Ω		6R6039	BTS-4700	
R18	150K		6R6398	BTS-150K	
R19	220Ω		6R3933	BTS-220	
R20	2200Ω		6R6049	BTS-2200	
R21	18K		6R2119	BTS-18K	
R22	3300Ω		6R6581	BTS-3300	
R23	220Ω	1	6R6389	BTA-220	
R24	1000Ω		6R6229		
R25	4700Ω		6R6039	BTS-4700	
R26	220Ω		6R3933	BTS-220	
R27	33Ω		6R2058	BTS-33	
R28	33K		6R6410	BTS-33K	
R29	220Ω		6R3933	BTS-220	
R30	220Ω		6R3933	BTS-220	
R31	33Ω		6R2035	BTS-33	
R32	22Meg		6R68658		
R33	220K		6R6015		
R34	4700Ω		6R6090	BTS-4700	
R35	270K		6R6414	BTS-270K	
R36	22K		6R6028	BTS-22K	Note 1
R37	47000Ω	3	6R16928	BTS-47000	
R38	2200Ω		6R6069	BTS-2200	
R39	47K		6R6048	BTS-47K	
R40	100K		6R6075	BTS-100K	
R41	3300Ω		6R6581	BTS-3300	
R42	1000Ω		6R6229	BTS-1000	
R43	56K		6R6074	BTS-56K	Note 3
R44	180Ω		6R6860	BTS-180	Note 3
R45	15K		6R6477	BTS-15K	
R46	82K		6R6644	BTS-82K	Note 4
R47	560K		6R6597	BTS-560K	
R48	560Ω		6R628	BTS-560	

ITEM No	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R49	270K		6R6414	BTS-270K	
R50	130Ω		6R6551	BTS-130	
R51	1Meg		6R6004	BTS-1Meg	
R52	470K		6R6377	BTS-470	
R53	47K		6R6056	BTS-47K	Note 5
R54	47K		6R6056	BTS-47K	Note 6
R55	68K		6R6074	BTS-68K	
R56	470K		6R6377	BTS-470K	
R57	100K		6R6075	BTS-100K	
R58	1Meg		6R6004	BTS-1Meg	
R59	100K		6R6075	BTS-100K	
R60	150K		6R6398	BTS-150K	
R61	51K		6R6644	BTS-51K	
R62	39K		6R6487	BTS-39K	
R63	1Meg		6R6004	BTS-1Meg	Note 7
R64	1Meg		6R6004	BTS-1Meg	
R65	560Ω		6R12802		
R66	560Ω		6R12802		
R67	150K		6R6398	BTS-150K	
R68	100K		6R6031		
R69	22K		6R6397		
R70	150K		6R6398	BTS-150K	
R71	4.7Meg		6R6446		
R72	56000		6R617		
R73	820Ω		6R6359	BTS-820	
R74	39K		6R6487		
R75	68K		6R5074		
R76	680K		6R6475		
R77	68000		6R6438		Note 9
R78	27K		6R6483	BTS-27K	
R79	470K		6R6377	BTS-470K	
R80	1Meg		6R6046	BTS-1Meg	
R81	100K		6R6018	BTS-100	
R82	120K		6R6015	BTS-120K	Note 10
R83	470K		6R6377	BTS-470K	
R84	390K	1	6R6733	BTA-390K	
R85	330K	1	6R6732	BTA-330K	
R86	3.3Ω		6R5T4	BW-3.3	
R87	68000	2	21B-6800		Note 11
R88	82K		17B706688		Note 12
R89	30Ω	15	17C741256		Note 13
R90	2.2Meg		6R2927	BTS-2.2Meg	Note 4

Note 1. Chassis with a code lower than "A-09" use a 10K in this application.
Note 2. Chassis coded "B" use a 39K in this application.
Note 3. Chassis coded "B" use a 270Ω in this application.
Note 4. Not used in some versions.
Note 5. Some versions may use a 150K in this application.
Note 6. Chassis with a code lower than "A-09" use a 22K in this application.
Note 7. Chassis with a code lower than "A-09" use a 100K in this application.
Note 8. Chassis coded "B" use a 2.2Meg in this application.
Note 9. Chassis with a code lower than "A-02" use a 470K in this application.
Note 10. Chassis with a code lower than "A-05" use a 470K in this application.
Note 11. Some versions may use a 680Ω, 2W in this application.
Note 12. Some versions may use add on 7.5Ω to this application.
(Manufacturer states to replace with a 5Ω (Part #17K74256).
Note 13. Chassis coded "B" use a 25Ω, 15W in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							NOTES
		MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	BCA TYPE No	Rem PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	Vert. Output	25B743122-A	Z1900 1,2	A-2821		V-314	A-8147	21R115 1/2	A-108X 3,5
	Alt. Vert. Output	25B743122	Z1900 1,2	A-2821		V-314	A-8147	21R115 1/2	A-108X 3,5
T2A	Yoke: Horiz. (24MHf)	24D740942	DF610 4/5	MDF-92 4/5	2351X 4/5	Y90F19 4/5	DY-16A 4/5	Y-16 4/5	Y-6 4
B	(90°) Vert. (60MHf)			4/5		4/5	4/5		NWI 4
M5	Yoke Rear Cover & Centering Device	48A732148							TCI
	Yoke Clamp	42A738178							CTJ
T3	Horiz. Output	24C740969 3	HVO-139						
	Primary Coil	24C740912							
	Secondary Coil	24B740941							

1 Connect as auto transformer.
2 Use 5 to 1 turns ratio.
3 Drill new mounting hole(s).
4 Connect same as original.
5 Use original rear cover and centering device.
6 Includes primary coil part #24C740R3 and secondary coil part #24B740941.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI	SEC	MOTOROLA PART No	Halldorson PART No.	Merit PART No.	Stancor PART No	Thordarson PART No	Triad PART No
T4	3700Ω	3-4Ω	25K740915	Z1105 D2	A-2998	A-3678 1	32B45 2	S-12X

① Tape taps on primary winding
② Drill one new mounting hole.

SPEAKER

ITEM No	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	MOTOROLA PART No.	GUAM PART No.	
	4"	PM	3-4Ω	50D740321 1	4A07	① Used in Models 14P3-1, -3, T14P3-1, -2, 14P4-1, T14P4-1, 14P5-1, -2, -3; T14P5-1, -2, -3
	4"	PM	3-4Ω	50K742419 2	4A07	② Used in Models 14P6-1, T14P6-1, 14P7-1, -2, T14P7-1, -2, 14P8-1, -2, T14P8-1, -2

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L2	Ant. Coil	24B740572 ①	
L3	40MC Trap	24B739800 ①	
L4	Ant. Coil	24C740040 ①	Channel 2
L5	Ant. Coil	24C740040 ①	Channel 3
L6	Ant. Coil	24C740040 ①	Channel 4
L7	Ant. Coil	24C740040 ①	Channel 5
L8	Ant. Coil	24C740040 ①	Channel 6
L9	Ant. Coil	24E739634 ①	Channel 13
L10	RF Coil	24A740466	
L11	Cath. Choke	24C741456	Includes 4, 7
L12	RF Coil	24A739361 ①	MMF Cap.
L13	RF Coil	24K740465 ②	Channel 2
L14	RF Coil	24K740465 ②	Channel 3

ITEM No.	USE	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L15	Mixer Bandpass Coil	24B740544		TV-138		
L29	1st. Video IF	24B740341				
L30	41.25MC Trap	24B739466 ①				
L31	2nd. Video IF	24B741339				
L32	3rd. Video IF	24B742190 ①				
L33	4th. Video IF	24C742201 ①				Includes caps., resonant choke (Part #24R119680)and M3
L34	Shunt Peaking Coil	24K740417 ①	19-3300		6133	130 Microhenries
L35	Series Peaking Coil	24C738606	19-3180	TV-184	6180	180 Microhenries
L36	4.5MC Trap	24K739190	20-4004			
L37	Shunt Peaking Coil	24C738606	19-3180	TV-184	6180	180 Microhenries
L39	Shunt Peaking Coil	24K736983	19-3500	TV-189	6138	470 Microhenries
L39	RF Choke	24RJ19969 *				
L40	1st. Sound IF	24K740596	17-3400	TV-181	1468	
L41	2nd. Sound IF	24B741648	17-3498	TV-183	6903	Includes caps.
L42	Quadrature Coil	24B741645			1481	
L43	Pil. Choke	24A738358	19-1001		4804	1.3 Microhenries
L44	Pil. Choke	24A738358	19-1001		4804	1.3 Microhenries

① Wafer assembly (#1V739004) includes L1 thru L8, C3 and C5.
② Wafer assembly (part #1V741367) includes L2 thru L17, C10, C11, R30 and R19.
③ Wafer assembly (part #1V739661) includes L28 thru L35, C28 and R22.
④ Alternate part #24K724655 used in chassis marked Run A-1I and above.
⑤ Alternate part #24C741456 used in chassis coded "A-0G thru A-0J-". Terminal connections are different.
* Not used in Chassis TS-433, Y, TTS-433, Y (Coded "B").
* Used in TS-433, Y, TTS-433, Y (Coded "B").

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							
	PRI.	SEC	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	BCA TYPE No	Rem PART No.	Thordarson PART No	Triad PART No
L45	57Ω		1V741308							13.8-68MH

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	TOTAL DIRECT RESISTANCE	D.C. CURRENT	INDUCTANCE @ CURRENT 1000 ^C/_A	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No	Thordarson PART No	Triad PART No
L46	.300A	25Ω	1 HY.	25K740674	C506I ①	C-3998 ①	C-3238 ①	28C44	C-17X ①

① Drill one new mounting hole.

MOTOROLA MODELS T14P3-1, -2, T14P4-1, T14P5-1, -2, -3, T14P6-1, T14P7-1, -2, T14P8-1, -2 (CH. TS-423), A, Y, WTS-423), Y, (CH. TTS-423), A, Y, WTS-423), Y).

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA	
K1	Ant. Input	470MMF, .3-1Meg	51B740235	Centralab	RC-471
K2	Ant. Input	470MMF, .3-1Meg	51B740235	Centralab	RC-471

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT (Measured)	MOTOROLA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.300A	48K122479 ①② 48K72008l ①③ 48K122244①③ 48K733250①③	1023A ①	1N1007④	RS350SL ①	6S350 ①	350A ①	
M2		48K741255①	1215 ① ⑤		1T1 ① ⑤			

① Selenium type.
② Used in Chassis Coded "A".
③ Alternate part used in Chassis Coded "B".
④ Germanium type.
⑤ Two (2) required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	CBS PART No.	SYLVANIA PART No.	
M3		48C739300 or 48K741818 or 48K741280	1N60	1N60	Video Det. (Clip-in)

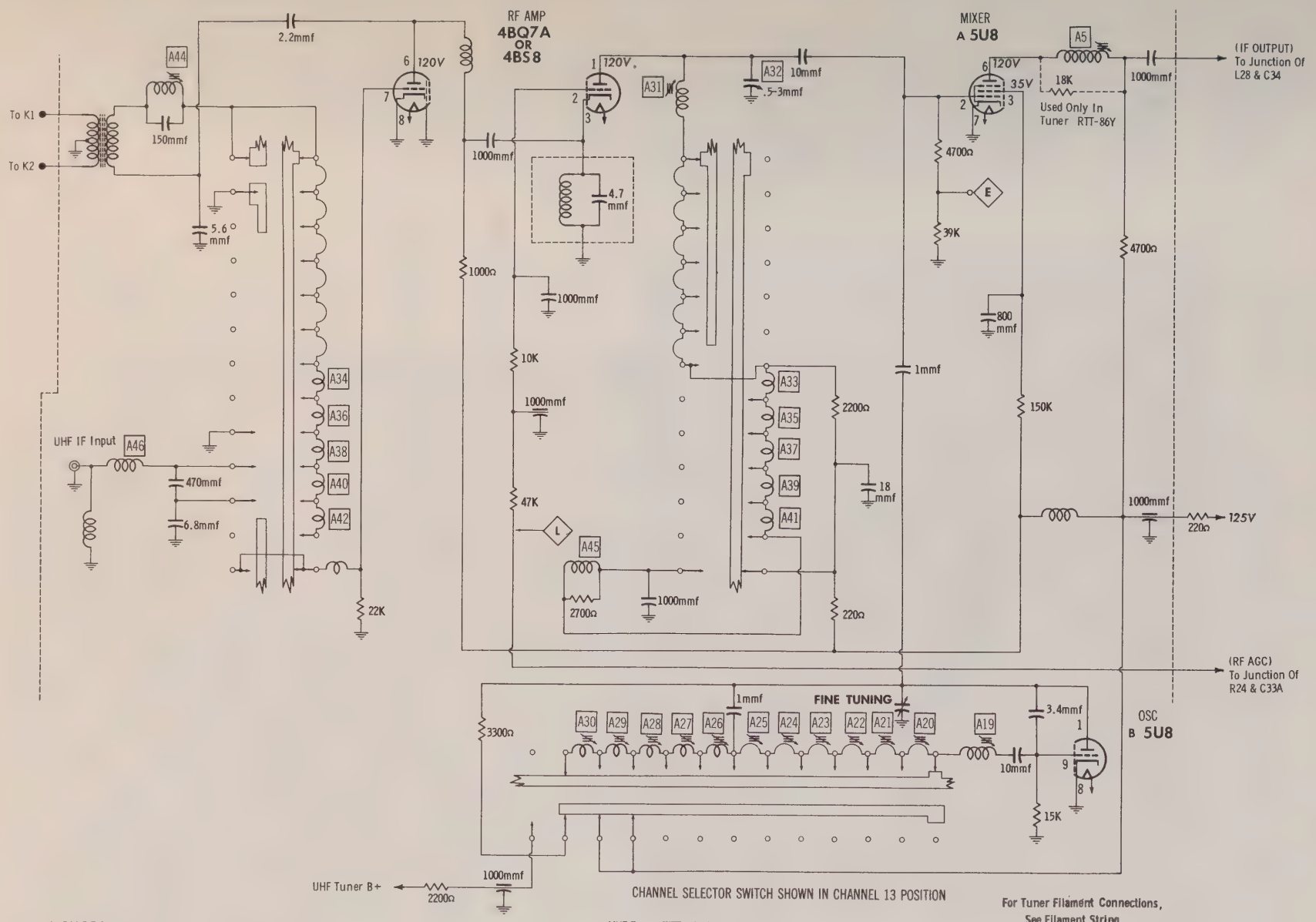
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuner		VHF, WTT-86B, Used in Ch. TS-423A
	Tuner	1V741370	VHF, WTT-86, Used in Ch. TS-423
	Tuner	1V741377	VHF, WTT-86Y, Used in Ch. TS-423Y
	Tuner	1V740763	VHF, VTT-84, Used in Ch. WTS-423
	Tuner	1V740770	VHF, VTT-84Y, Used in Ch. WTS-423Y
	Tuner	1V742109	VHF, RTT-86, Used in Ch. TTS-423
	Tuner	1V742127	VHF, RTT-86Y, Used in Ch. TTS-423Y
	Tuner	77D741212	UHF,
	Tuner	77K742138	UHF
M5	Switch	40A737565	Local-Distant-Slide type
M6	Centering Device	48A721145	Includes rear yoke cover
M7	Ion Trap	59K734028	

CABINETS & CABINET PARTS

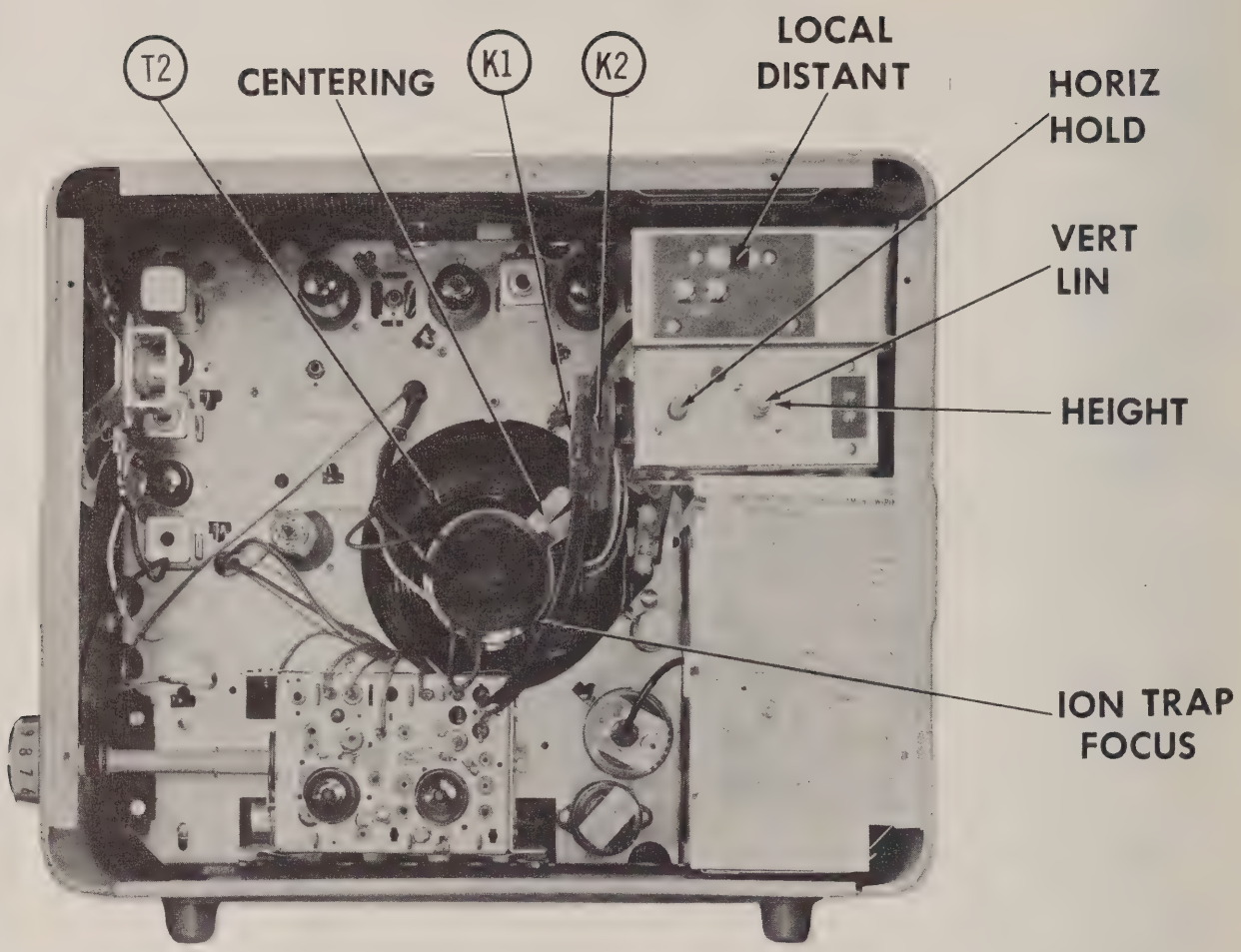
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	61K741561	Models 14P3-1, Y14P3-1, 14P6-1, Y14P6-1
Safety Glass	61C740184	Models 14P3-2, Y14P3-2, 14P4-1, Y14P4-1, 14P5-1, -2, -3, Y14P5-1, -2, -3, 14P7-1, Y14P7-1, 14P8-1, Y14P8-1
Bezel	13K741951	Models 14P3-2, Y14P3-2
Bezel	13E740182	Models 14P3-1, Y14P3-1
Bezel	13K740197	Models 14P4-1, Y14P4-1
Bezel	13K740887	Models 14P5-1, Y14P5-1
Bezel	13K740888	Models 14P5-2, Y14P5-2
Bezel	13K740889	Models 14P5-3, Y14P5-3
Bezel	13K742029	Models 14P6-1, Y14P6-1, 14P7-1, -2, Y14P7-1, -2
Bezel	13K743193	Models 14P8-1, Y14P8-1
Bezel	13K743192	Models 14P8-2, Y14P8-2
Knob	36C740823	Channel Selector - Models 14P3-1, -2, Y14P3-1, -2, 14P4-1, Y14P4-1, 14P5-1, -2, -3, Y14P5-1, -2, -3, 14P6-1, Y14P6-1, 14P7-1, -2, Y14P7-1, -2, 14P8-1, -2, Y14P8-1, -2
Knob	36C740837	Fine Tuning, Models 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2
Knob	36C740838	Fine Tuning, Models Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2
Knob	36K740809	On-off-volume, Models 14P3-1, -2, Y14P3-1, -2, 14P4-1, Y14P4-1, 14P5-1, -2, -3, Y14P5-1, -2, -3
Knob	36K742093	On-off-volume, Models 14P6-1, Y14P6-1, 14P7-1, -2, Y14P7-1, -2, 14P8-1, -2, Y14P8-1, -2
Knob	36B740808	Contrast - Models 14P3-1, -2, Y14P3-1, -2, 14P4-1, Y14P4-1, 14P5-1, -2, -3, Y14P5-1, -2, -3
Knob	36B740807	Vert. Hold, brightness - Models 14P3-1, -2, Y14P3-1, -2, 14P4-1, Y14P4-1, 14P5-1, -2, -3, Y14P5-1, -2, -3
Knob	36B742092	Vert. Hold, brightness, contrast - Models 14P6-1, Y14P6-1, 14P7-1, -2, Y14P7-1, -2, 14P8-1, -2, Y14P8-1, -2
Cabinet	16F740180	Models 14P3-1, Y14P3-1
Cabinet	16K741953	Models 14P3-2, Y14P3-2
Cabinet	16K740196	Models 14P4-1, Y14P4-1
Cabinet	16K740884	Models 14P5-1, Y14P5-1
Cabinet	16K740885	Models 14P5-2, Y14P5-2
Cabinet	16K740886	Models 14P5-3, Y14P5-3
Cabinet	16F742031	Models 14P6-1, Y14P6-1
Cabinet	16K742032	Models 14P7-1, Y14P7-1
Cabinet	16K742443	Models 14P7-2, Y14P7-2
Cabinet	16K743208	Models 14P8-1, Y14P8-1
Cabinet	16K743207	Models 14P8-2, Y14P8-2



ALTERNATE TUNER SCHEMATIC

MOTOROLA MODELS Y14P3-1, -2, Y14P4-1, Y14P5-1, -2, -3, Y14P6-1, Y14P7-1, -2, Y14P8-1, -2, 14P3-1, -2, 14P4-1, 14P5-1, -2, -3, 14P6-1, 14P7-1, -2, 14P8-1, -2 (Ch. TS-423, A, Y, TTS-423, Y, WTS-423, Y)



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the brightness and contrast controls for a normal picture.

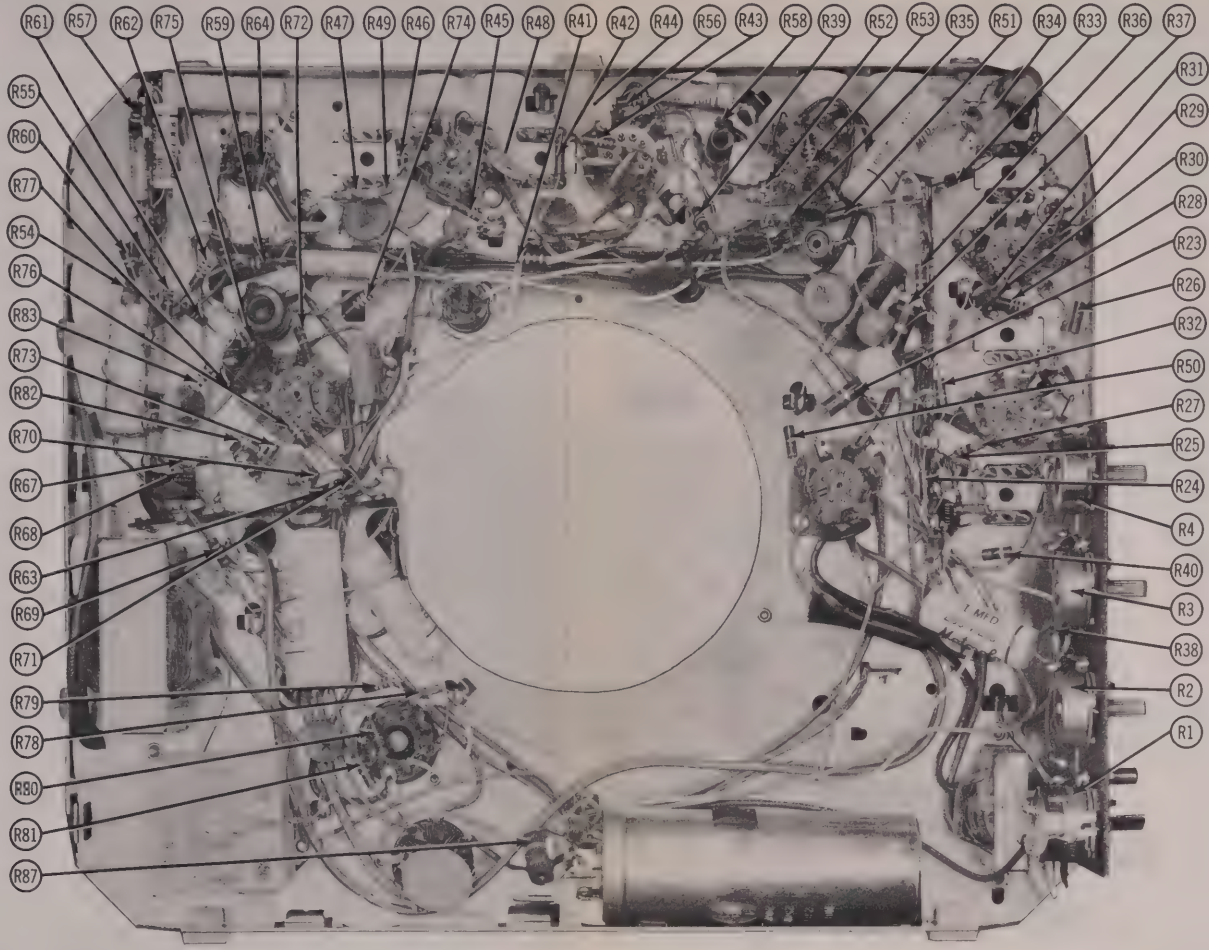
1. Connect a piece of wire from point Ⓜ to chassis, thereby grounding the AFC circuit.

2. Connect a .1MFD 400 volt capacitor from point Ⓝ to chassis thereby shorting the horizontal frequency coil.

3. Adjust the horizontal hold control to the point where the picture remains stable horizontally.

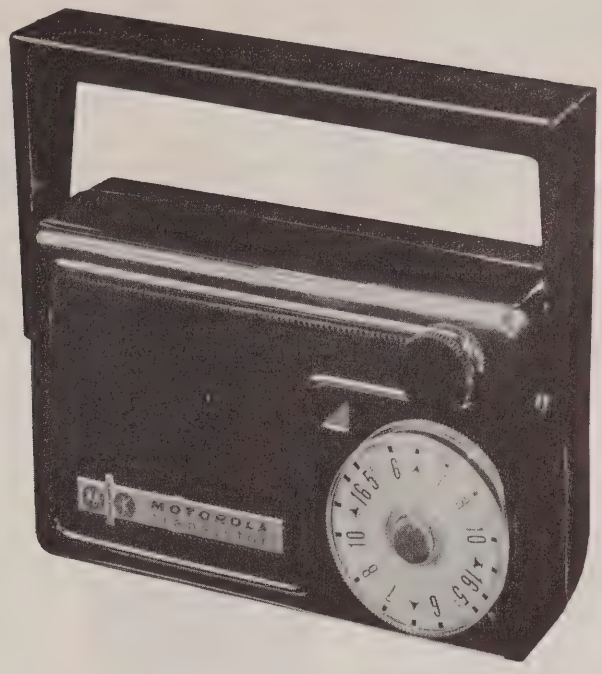
4. Remove the capacitor from point Ⓝ and adjust the horizontal frequency slug (B1) to the point where the picture again remains stationary horizontally.

5. Remove the short from point Ⓜ and adjust the horizontal hold control until the picture remains in sync over 30 degrees of its range when switching off channel and back again.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MOTOROLA
MODEL 66T1 (Ch. HS-556)



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOTOROLA
MODEL 66T1 (Ch. HS-556)

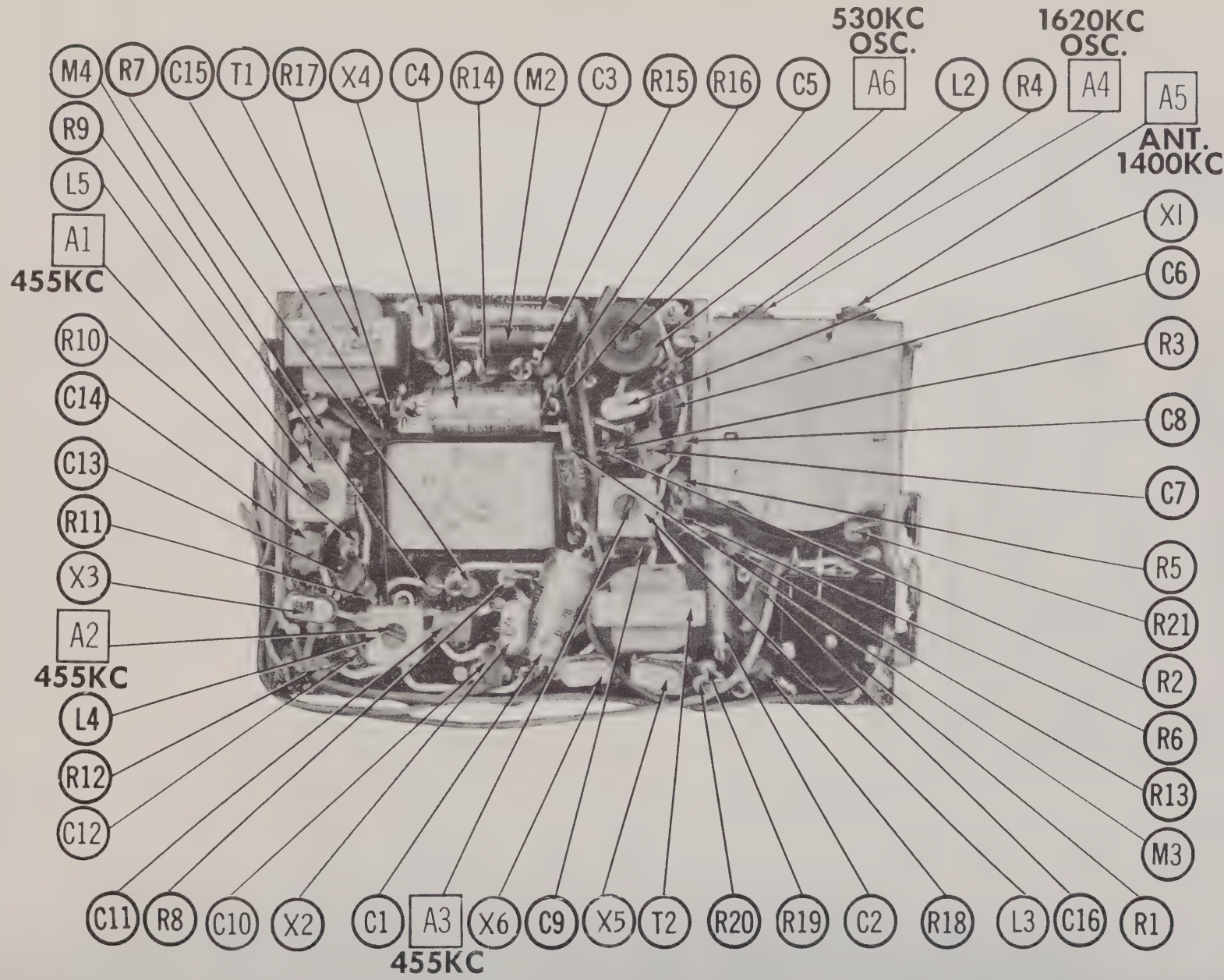
TRADE NAME	Motorola Model 66T1 (Ch. HS-556)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	6 Volts DC
RATING	8MA @ 6 Volts DC
TUNING RANGE—BROADCAST	530KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across earphone jack.	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A5	"
	The following steps are not necessary unless osc. coil core (A6) has been tampered with or associated components have been replaced. Adjust oscillator trimmer (A4) 1/4 turn from tight.						
4.		Loop	530KC	Tuning gang fully closed.	Across earphone jack.	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5.		"	1620KC	Tuning gang fully open.	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 4 & 5 until required range is covered, making step 5 the last adjustment.
6.		Loop	1400KC	Tune to 1400KC signal.	Across earphone jack.	A5	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	USE		TYPE	NOTES
X1	Converter	(2N172)	48C124216	
X2	1st IF	(2N145)	48C124220	Note 1
X3	2nd IF	(2N147)	48C124221	Note 1
X4	Driver	(2N185)	48C124219	Note 2
X5	Output	(2N185)	48C124219	
X6	Output	(2N185)	48C124219	

Note 1. X2 & X3 may be type 2N146 (Part #48C124218).
Note 2. Type 354 may be used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	50	10	23K635407	XPP10V50	NL50-10	TT10X50			R2305 *
C2	6	10	23K636769	XPP12V5	NL6-25	TT12X5	ML6-15		TE-1203
C3	6	10	23K636769	XPP12V5	NL6-25	TT12X5	ML6-15		TE-1203
C4	50	10	23K635407	XPP10V50	NL50-10	TT10X50			R2305 *

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	40000		21B635399							
C6	10000		21K635404							
C7	390	500	21K124827	1468-00039	DD-391	5W5T39	ED-390	UC-5339	1FM-339	
C8	10000		21K635404							
C9	10000		21K635404							
C10	10000		21K635404							
C11	390	500	21K124827	1468-00039	DD-391	5W5T39	ED-390	UC-5339	1FM-339	
C12	10000		21K635404							
C13	10000		21K635404							
C14	390	500	21K124827	1468-00039	DD-391	5W5T39	ED-390	UC-5339	1FM-339	
C15	40000		21K636380							
C16	20000		21K636014							

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	10K	1/4	18K636772					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	33K		6R6410	BTS-33K	
R3	100K		6R6031	BTS-100K	
R4	1500Ω		6R6038	BTS-1500	
R5	470Ω		6R6090	BTS-470	
R6	18K		6R5591	BTS-18K	
R7	2200Ω		6R6069	BTS-2200	
R8	1000Ω		6K121301	BTS-1000	
R9	10K		6R6320	BTS-10K	
R10	470Ω		6R6090	BTS-470	
R11	2200Ω		6R6069	BTS-2200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R12	1000Ω		6K121301	BTS-1000	
R13	1500Ω		6R6038	BTS-1500	
R14	68K		6R6074	BTS-68K	
R15	10K		6R6320	BTS-10K	
R16	220Ω		6R6270	BTS-220	
R17	2700Ω		6R5577	BTS-2700	
R18	68Ω		6R2039	BTS-68	
R19	10Ω		6R5621	BTS-10	
R20	10Ω		6R5621	BTS-10	
R21	100Ω		6R6326	BTS-100	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5:	1	25B636770	GH113 ①			TR-3 ①		① Tape Center Tap On Primary Winding. Use Original Term. Board.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	325Ω CT	13Ω	25B636771	GH119 ①			TR-16 ①		① Use Original Terminal Board.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	2 3/4"	PM	13Ω	50K636775		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	1V636794				Includes Handle
L2	Osc. Coil	24K636773				
L3	1st. IF	24K635484				Note 1
L4	2nd IF	24C635403				Note 2
L5	3rd IF	24K635641				Note 3

Note 1. Alternate Part #24D636674 has internal 390MMF primary trimmer.
Note 2. Alternate Part #24K636668 or 24K636675 has internal 390MMF primary trimmer.
Note 3. Alternate Part #24K636676 has internal 390MMF primary trimmer.

BATTERIES

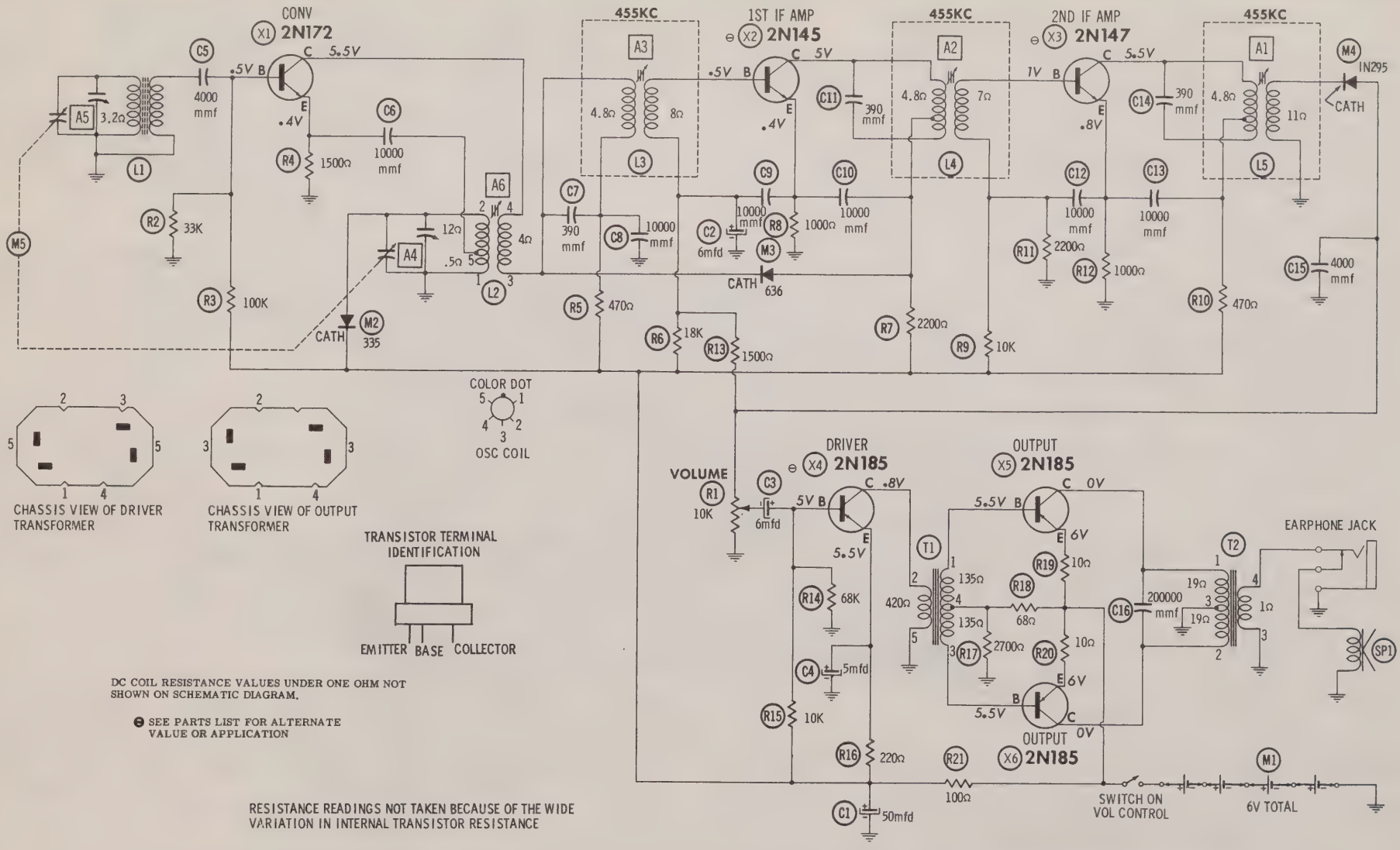
ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V		Z		915		M-15 or Mercury type ZM-9		7-R		Use 4 in series

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MOTOROLA PART No.	SYLVANIA PART No.	
M2	335	48K636691	1N60	Limiter (Pigtail)
M3	636	48K636691	1N60	Limiter (Pigtail)
M4	1N295	48K636778	1N60	Audio Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M5	Tuning Cap.	19B635410	2 Gang (Ant. 10-132MMF)
	Knob	36C635520	Tuning
	Knob	36K636759	Volume
	Cabinet	16E636760	
	Handle	1V636794	Includes L1
	Earphone Jack	9B633266	



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS NOT TAKEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal aplied for voltage measurements.

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NEWCOMB
MODEL CO-1020

NEWCOMB
MODEL CO-1020

NEWCOMB
MODEL CO-1020

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRADE NAME	Newcomb Model CO-1020
MANUFACTURER	Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
TYPE SET	AC Operated 7 Channel 20 Watt Audio Amplifier
TUBES (Six)	Types 12AX7 Preamplifier, 6AV6 AF Amplifier, 12AX7 AF Amp.-Phase Inv., (2) 6L6GB Output, 5U4GA Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .96 Amp. @ 117 Volts AC (105 Watts)

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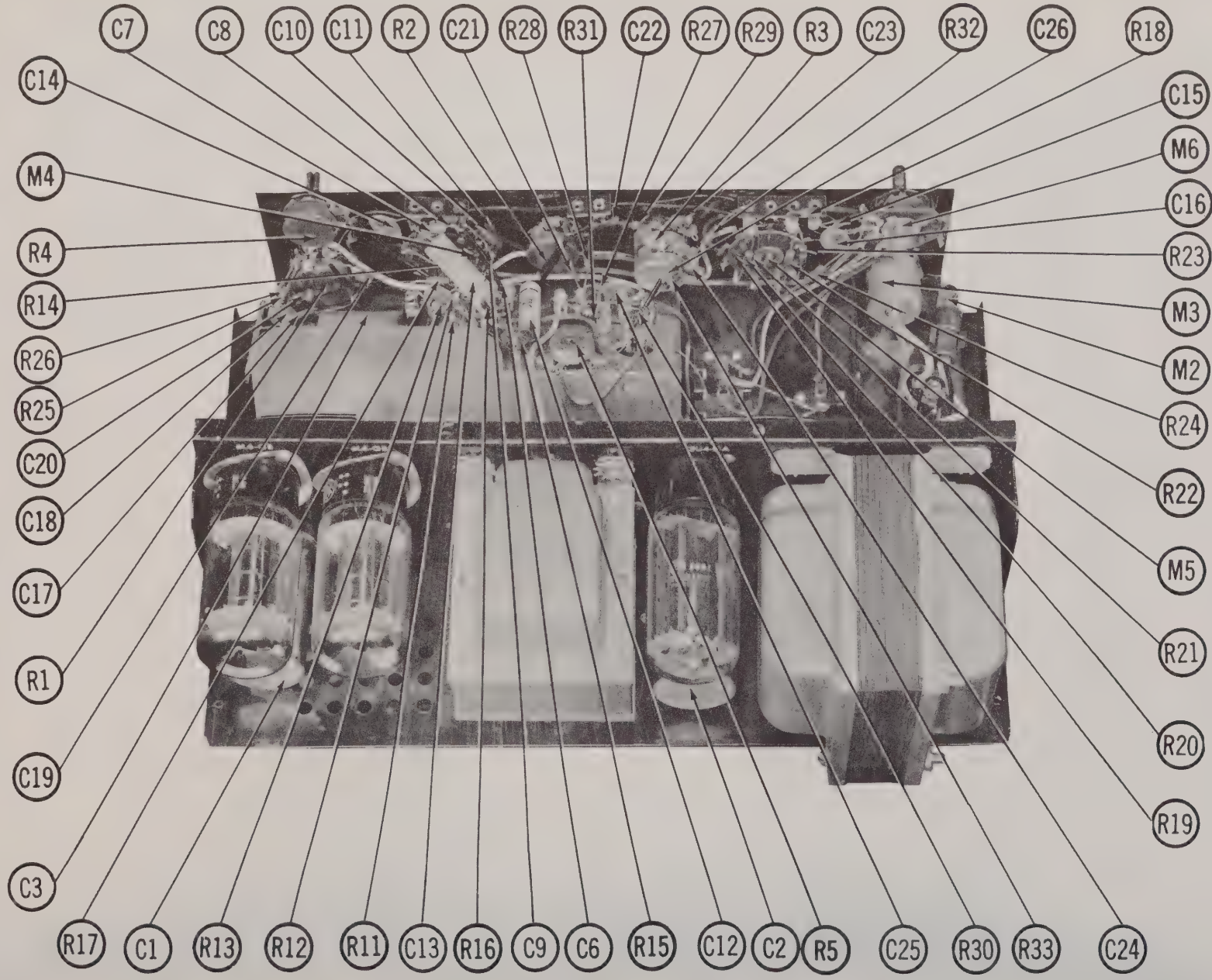


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7	
V2	AF Amplifier	6AV6	
V3	AF Amp. -Phase Inv.	12AX7	

ITEM No.	USE	TYPE	NOTES
V4	Output	6L6GB	
V5	Output	6L6GB	
V6	Rectifier	5U4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲60	500	CE-33	AFH3-53	D0680		TMT-46		R2409 *
B	▲10	475							
C2A	▲20	475	CE-30	AFH4-19-10		FP474.5			R2405 *
B	■10	475							
C	▲10	475							
D	25	50							
C3	4	450	CE-1	PRS450V4	BR445	TC70	TD-4-450	FM-4504	TVA-1702

* Non catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

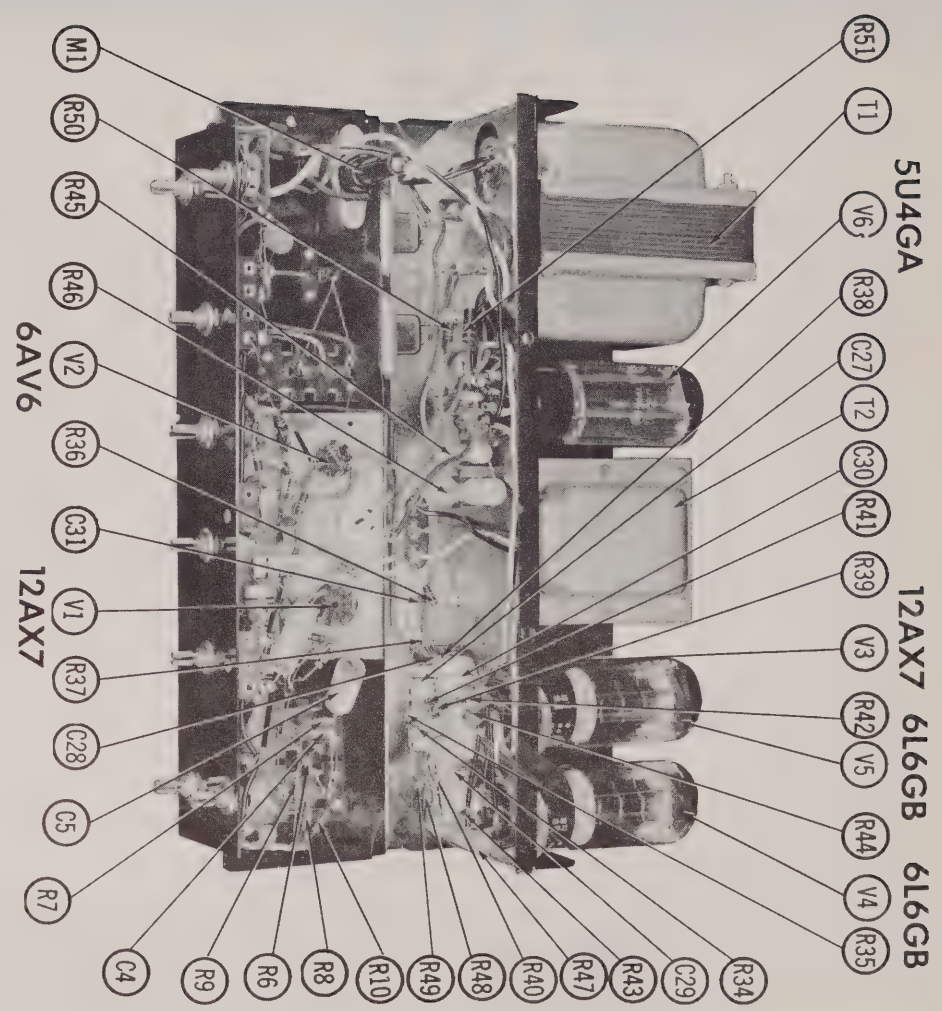
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	NEWCOMB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	100		CM-14	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C5	.047	600	CP-49	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C6	.047	600	CP-49	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	Note 1
C7	47		CM-3	SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C8	100		CM-14	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C9	250		CM-22	SI 250	D6-251	LT6T25	GP-250	UC-5325	5GA-T25	
C10	350		CM-26	SI 350	D6-351	LT6T35	GP-350	UC-5335	5GA-T35	Note 2
C11	1000		CM-38	SI 1000	D6-102	LT6D1	GP-1000	DC521	5HK-D1	
C12	.01	600	CP-45	BPD-01	DD-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C13	.022	600	CP-47	BPD-02	DD-203	CUB6S22	ED-.02	GEM-6122	6TM-S22	
C14	1600		CM-52	BPD-0015	DD-152	L10D15	ED-1500	UC-5215	5HK-D15	
C15	20000		CM-35	BPD-02	DD-203	BYB6S2	ED-.02		5HK-S2	
C16	20000		CM-35	BPD-02	DD-203	BYB6S2	ED-.02		5HK-S2	
C17	20000		CM-35	BPD-02	DD-203	BYB6S2	ED-.02		5HK-S2	
C18	20000		CM-35	BPD-02	DD-203	BYB6S2	ED-.02		5HK-S2	
C19	100		CM-14	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C20	47		CM-3	SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C21	10000		CM-32	BPD-01	DD-103	BYA6S1	ED-.01	DC511	5HK-S1	
C22	1000		CM-38	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C23	470		CM-25	SI 470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C24	470		CM-25	SI 470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C25	10000		CM-32	BPD-01	DD-103	BYA6S1	ED-.01	DC511	5HK-S1	
C26	20000		CM-35	BPD-02	DD-203	BYB6S2	ED-.02		5HK-S2	
C27	.047	600	CP-49	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C28	100		CM-14	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C29	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C30	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C31	250		DM-22	BPD-00025	D6-251	LT6T25	GP-250	UC-5325	5GA-T25	

Note 1. Some versions may use .1MFD in this application (Part #CP-52)
Note 2. Some versions may use 300MMF in this application

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	RV-71-K				UDT-285	Loudness, Tap @ 150K & 300K
R2A	2Meg	½	RV-59-K		A47F3-2Meg	Q18-139X	UT-451	Treble, Tap @ 1.2Meg
B	Shaft				KSS-3	Not req.	Not req.	
R3A	5Meg	½	RV-57-K					Bass
B	5Meg							
R4A	500K	½	RV-86-K	B-59	A47-500K-S	Q11-133	U50	Level
B	Shaft			Not req.	KSS-3	Not req.	Not req.	
R5	100Ω	2	RV-75					Hum Balance

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	NEWCOMB PART No.	IRC PART No.	
R6	100K		RR-27	BTS-100K	
R7	180K		RR-29	BTS-180K	
R8	56K		RR-25	BTS-56K	
R9	22K		RR-21	BTS-22K	
R10	5600Ω		RR-15	BTS-5600	
R11	18Meg		RR-140	BTS-18Meg	
R12	180K		RR-29	BTS-180K	
R13	100K		RR-27	BTS-100	
R14	470K		RR-33	BTS-470K	
R15	18Meg		RR-140	BTS-18Meg	
R16	270K		RR-31	BTS-270K	
R17	56K		RR-25	BTS-56K	
R18	180K		RR-29	BTS-180K	
R19	1Meg		RR-37	BTS-1Meg	
R20	560K		RR-34	BTS-560K	
R21	330K		RR-32	BTS-330K	
R22	470K		RR-33	BTS-470K	
R23	270K		RR-31	BTS-270K	
R24	2.2Meg		RR-40	BTS-2.2Meg	
R25	33K		RR-23	BTS-33K	
R26	10K		RR-18	BTS-10K	
R27	120K		RR-28	BTS-120K	
R28	330K		RR-32	BTS-330K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	NEWCOMB PART No.	IRC PART No.	
R29	270K		RR-31	BTS-270K	
R30	18Meg		RR-140	BTS-18Meg	
R31	270K		RR-31	BTS-270K	
R32	560K		RR-34	BTS-560K	
R33	100K		RR-27	BTS-100K	
R34	100K		RR-27	BTS-100K	
R35	10K		RR-18	BTS-10K	
R36	10K		RR-18	BTS-10K	
R37	1500Ω		RR-8	BTS-1500	
R38	1800Ω		RR-9	BTS-1800	
R39	470K		RR-33	BTS-470K	
R40	100K 5%		RR-50	BTS-100K 5%	
R41	4700Ω		RR-14	BTS-4700	
R42	100K 5%		RR-50	BTS-100K 5%	
R43	270K		RR-31	BTS-270K	
R44	270K		RR-31	BTS-270K	
R45	2250Ω	10	RR-126	1 3/4A-2250	
R46	20K	10	RR-104	PW10-20K	
R47	250Ω	5	RR-94	PW7-250	
R48	56K		RR-25	BTS-56K	
R49	56K		RR-25	BTS-56K	
R50	27K		RR-22	BTS-27K	
R51	6.8Ω 5%	1	RR-149		

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .96A	720VCT @ .122A	5V @ 3A	6.3VCT @ 2.8A	TR-118	P9316 ①	P-3173 ②	PC8411 ①	24R064 ①	R-14A ① ②

① Tape Center Tap On 6.3V Winding.
② Drill New Mounting Holes.

CHASSIS—BOTTOM VIEW

TRANSFORMER (AUDIO OUTPUT)

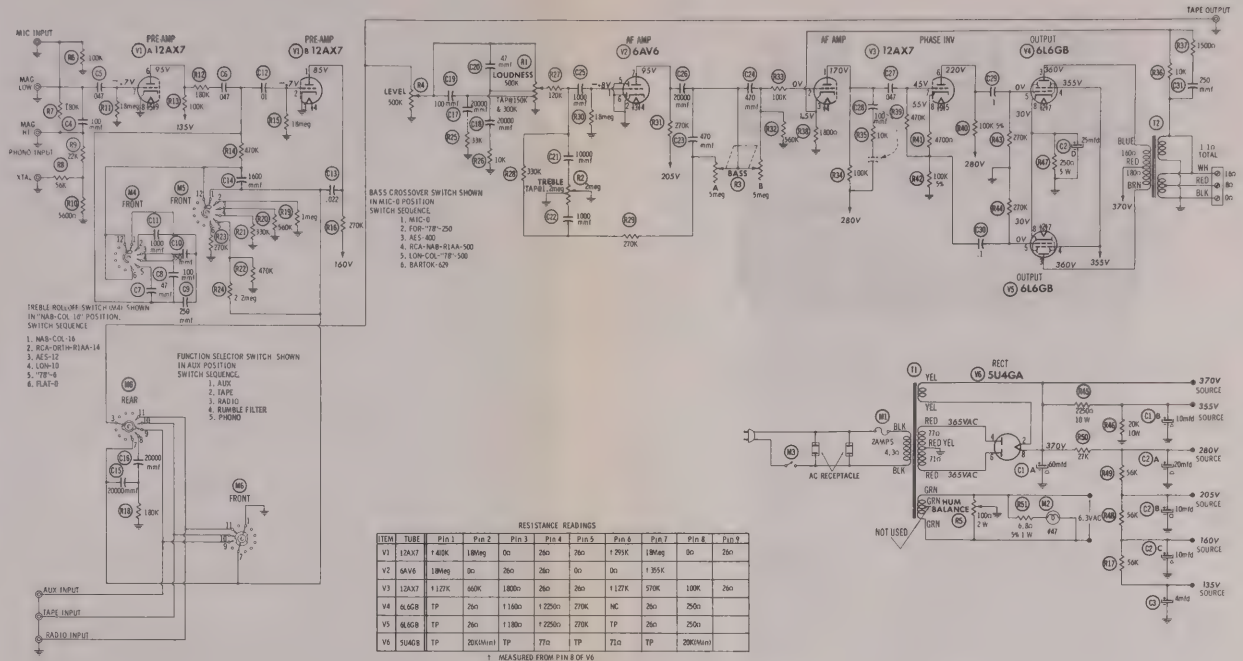
ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6300Ω CT	16Ω Tap @ 8Ω	TR-161	Z1403 ①	A-3130 ①	A-3307 ①	22S68 ①	S-60A ①	① Drill new mounting holes.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			NEWCOMB PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A	FA-5		312002. (3AG2A)	341001	AGC2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	NEWCOMB PART No.	NOTES
M2	Pilot Light		#47
M3	Switch		ON-OFF
M4	Switch	SY-89	Treble Rolloff
M5	Switch	SY-89	Bass Crossover
M6	Switch	SY-91	Selector



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑40K	1MMeg	0Ω	26Ω	26Ω	↑295K	1MMeg	0Ω	26Ω
V2	6AV6	1MMeg	0Ω	26Ω	26Ω	0Ω	0Ω	↑355K		
V3	12AX7	↑127K	660K	1800Ω	26Ω	26Ω	↑127K	570K	100K	26Ω
V4	6L6GB	TP	26Ω	↑160Ω	↑225Ω	270K	NC	26Ω	25Ω	
V5	6L6GB	TP	26Ω	↑180Ω	↑225Ω	270K	TP	26Ω	25Ω	
V6	5U4GB	TP	20K(Min)	TP	77Ω	TP	71Ω	TP	20K(Min)	

↑ MEASURED FROM PIN 8 OF V6
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

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PHOTOFACT* Folder

*TRADE MARK

SENTINEL CHASSIS U75-01AA, U75-02AA, V75-01AA, V75-02AA

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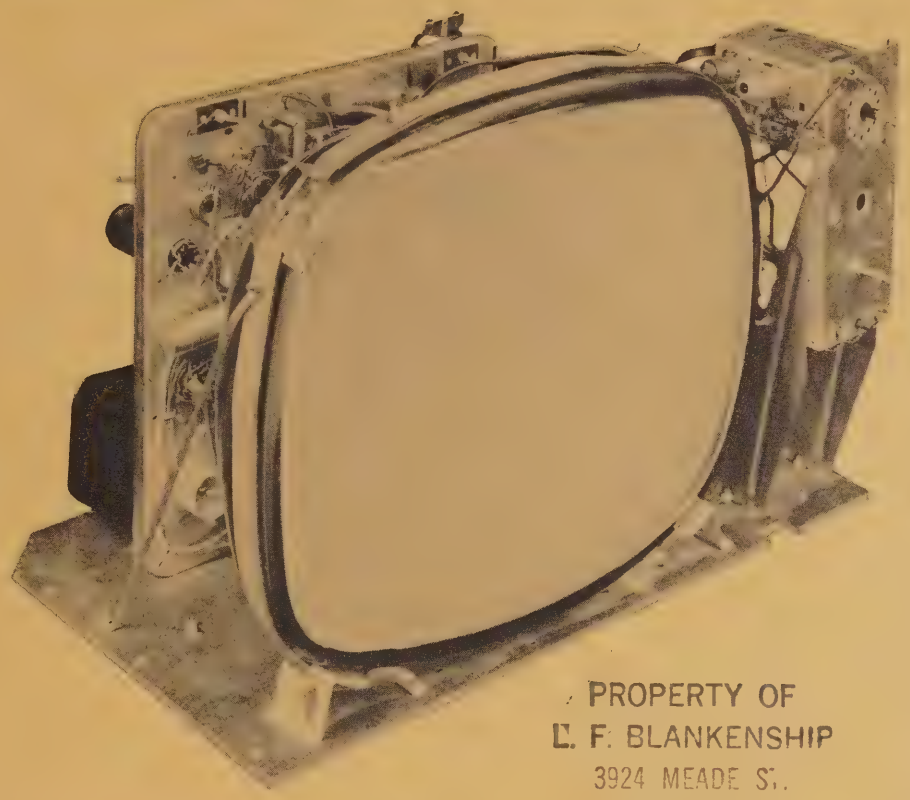

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DENVER COLORADO

TRADE NAME	Sentinel Chassis U75-01AA, U75-02AA, V75-01AA, V75-02AA (75 Series) Amplifier Chassis AMP-155
MANUFACTURER	Sentinel Radio Co., Fort Wayne 4, Indiana
TYPE SET	Television Receiver
TUBES	TV: Eighteen Amplifier : Three
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING TV & Amp. 215 Watts, 1.8 Amp. @ 117 Volts AC Amp. 25 Watts, .3 @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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SENTINEL CHASSIS U75-01AA, U75-02AA, V75-01AA, V75-02AA

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DATE 8-57 SET 366 FOLDER 10

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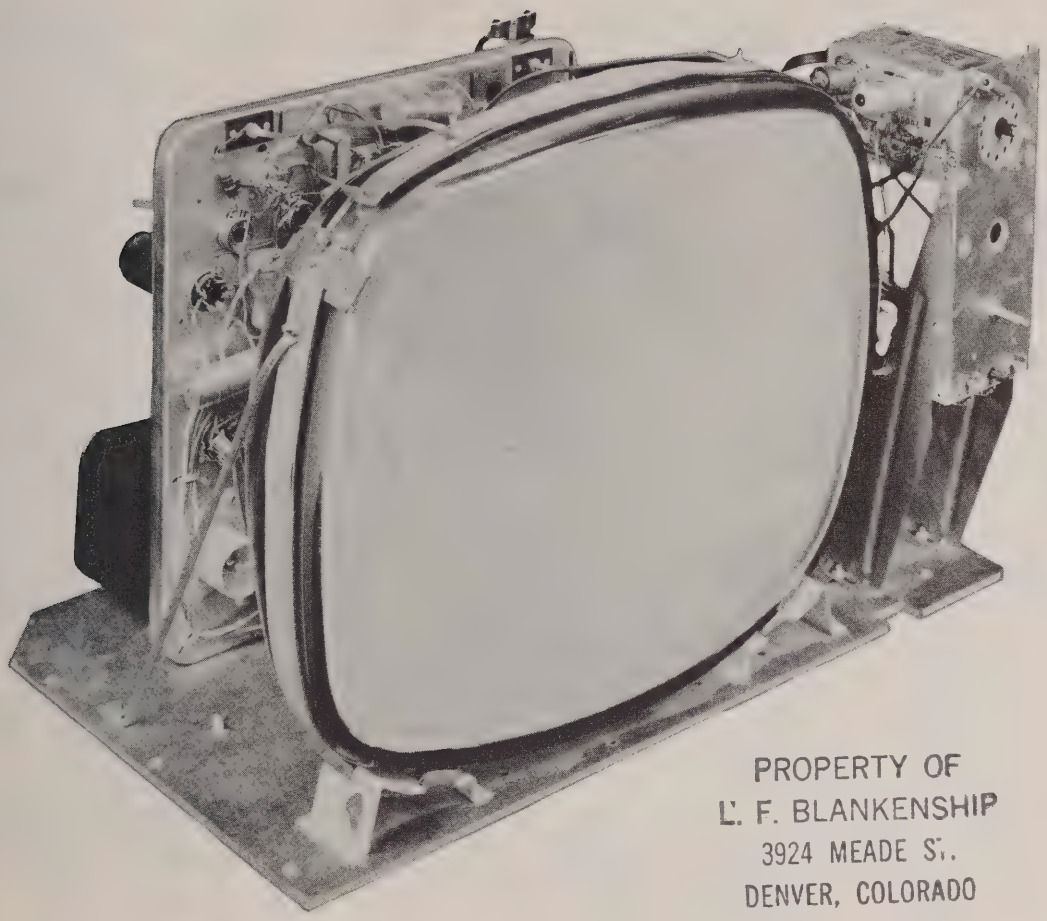

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SENTINEL CHASSIS U75-01AA, U75-02AA, V75-01AA, V75-02AA

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 13 adjustment is located at 12 o'clock, proceed in a clockwise direction adjusting for best picture and sound.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10, or 6 and 1. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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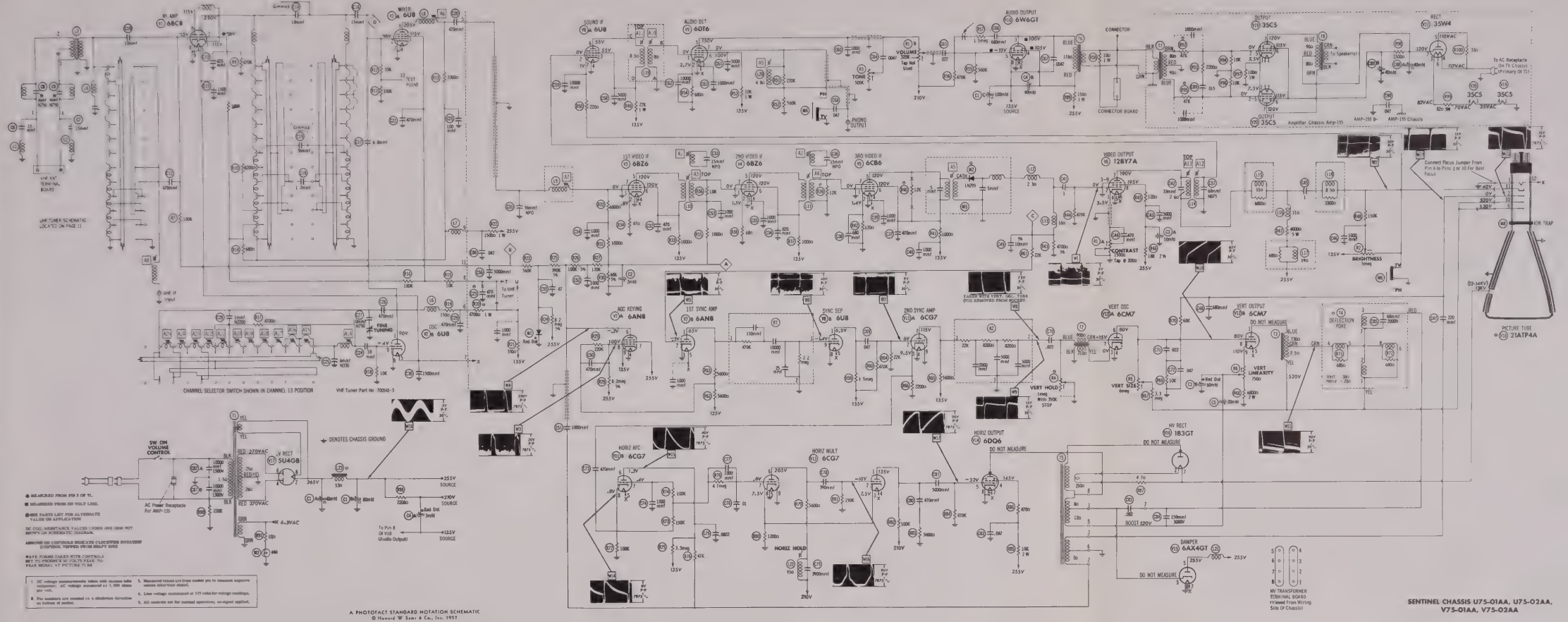
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TUBE PLACEMENT CHART

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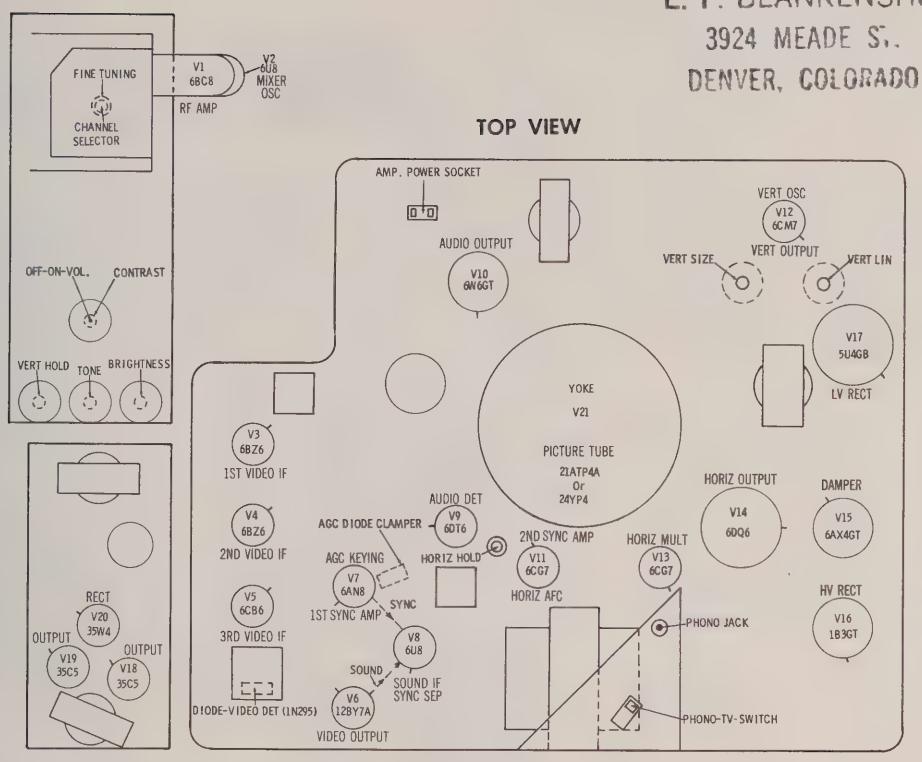


TUBE FAILURE CHECK CHART

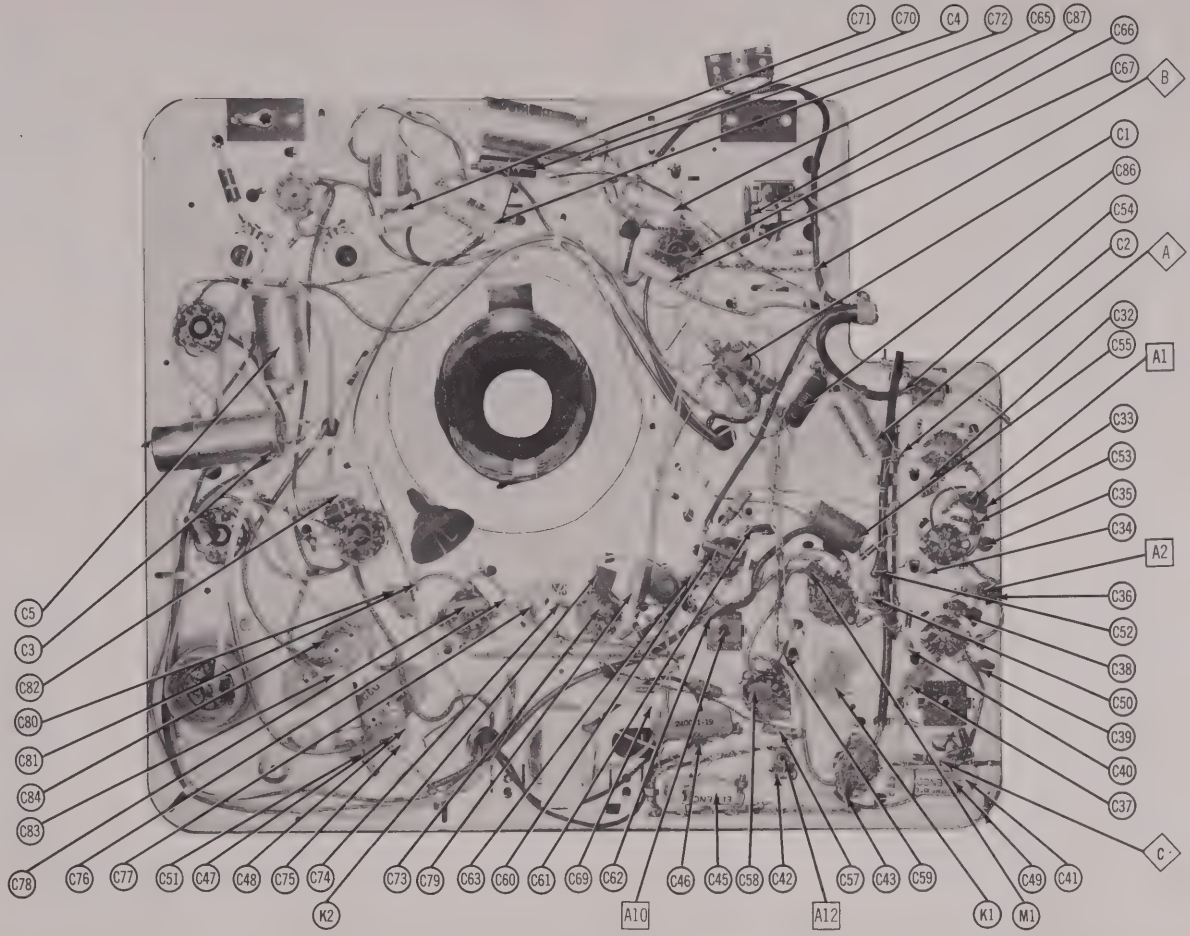
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V17

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, Diode (M2), V8, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V8, V9, V10, V19, V20, V21
Overloaded picture - V7, V10

SYNC FAILURE
No vert. sync - V7, V8, V11, V10
No horiz. sync - V7, V8, V11, V10
No vert. or horiz. sync - V7, V8, V11, V10

SWEEP FAILURE
No raster, has sound - V11, V13, V14, V15, V16, V18
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V13, V14, V15
Narrow picture - V13, V14, V15, V17
Vert. off freq. - V12
Horiz. off freq. - V13



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Allow a 20 minute warm-up period for the receiver and test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Set contrast control fully counter clockwise.
Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect the negative lead of a 1.5 volt bias supply to point Ⓑ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.
Step 5 is to be used ONLY if set contains UHF tuner.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	50Ω Carbon Resistor	High side to pin 1 (grid) of 6BZ6 (V3). Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru 15K to point Ⓒ. Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 1.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	"	"	42.75MC 45.75MC	"	"	A3, A4, A5	Set generator to provide 4 volt peak to peak indication on the scope. Adjust for response curve similar to Fig. 2 with markers as shown. Recheck steps 1 and 2.
4.	"	High side to point Ⓓ. Low side to chassis.	"	41.25MC 42.75MC 43.0MC 45.0MC 45.75MC 47.25MC	"	"	A6, A7	Adjust for response curve similar to Fig. 3 with markers as shown.
5.	1000Ω	High side to point Ⓔ. Low side to tuner chassis.	"	"	UHF	"	A8	Adjust for maximum gain and MINIMUM tilt of curve similar to Fig. 3.

SOUND IF ALIGNMENT

Turn the set on and tune in a strong TV signal. Turn the contrast control fully clockwise. Adjust A9 for maximum sound output and MINIMUM distortion. Reduce the signal strength by removing the antenna connection to the receiver or connecting a variable attenuator between the antenna and receiver, so that with the volume control set at maximum, the sound will be barely audible. Adjust A10 for MINIMUM distortion and clearest sound.
With the same weak signal input, adjust A11 and A12 for MINIMUM noise and clearest sound.
Reduce the signal still further until noise is present in the sound and retouch A10 for MINIMUM noise and clearest sound.

4.5MC TRAP ALIGNMENT

Turn the set on and adjust A13 for MINIMUM 4.5MC beat interference in the picture.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Fig. 4	Across VHF antenna terminals thru matching network (Fig. 4).	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

UHF TUNER AND VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

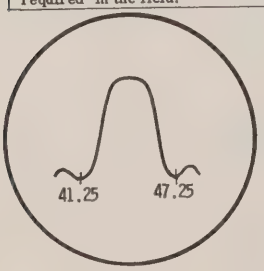


FIG. 1

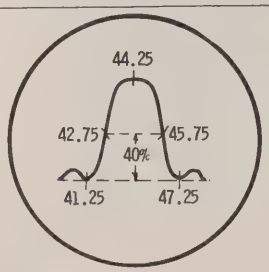


FIG. 2

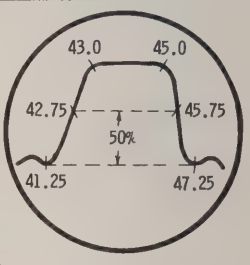


FIG. 3

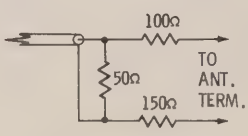


FIG. 4

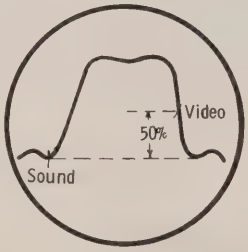
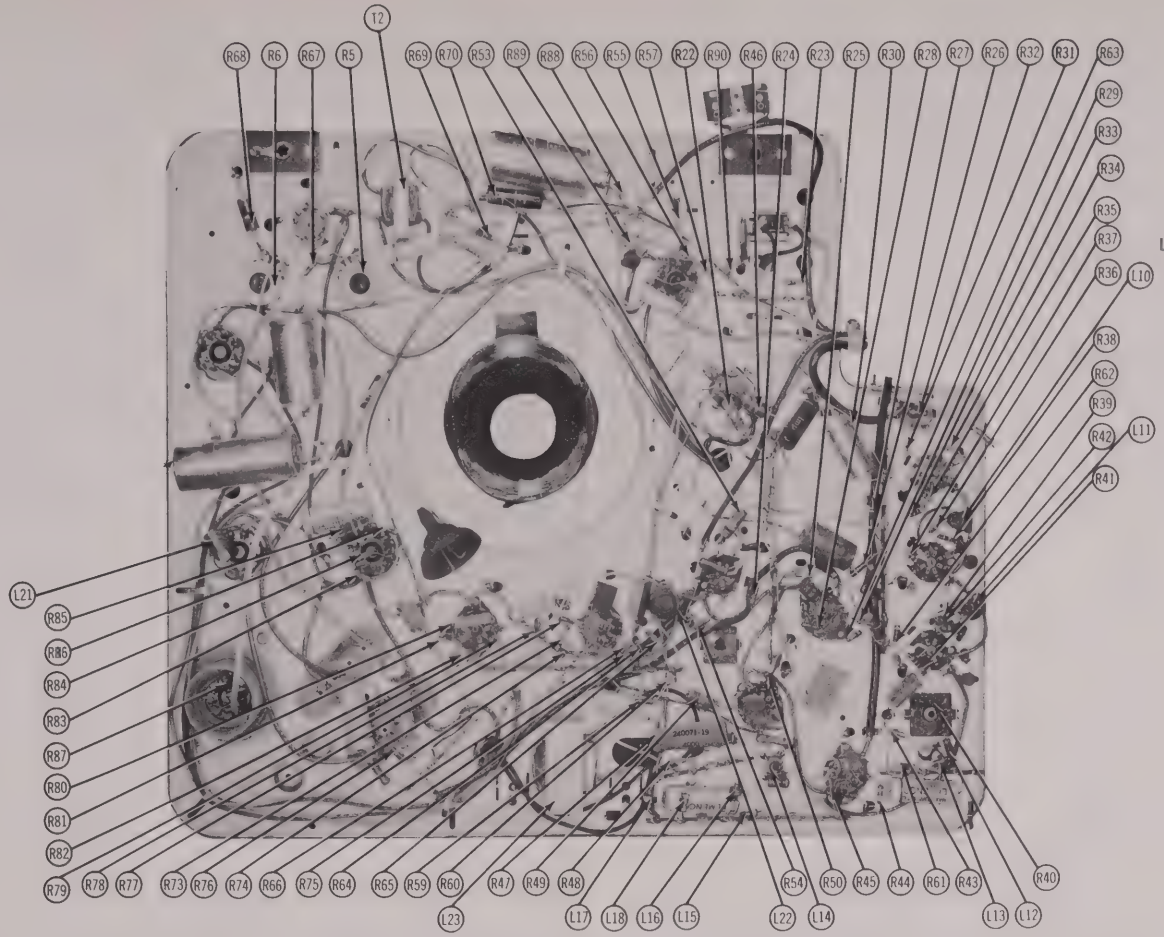


FIG. 5

SENTINEL CHASSIS U75-01AA, U75-02AA, V75-01AA, V75-02AA

CHASSIS TOP VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

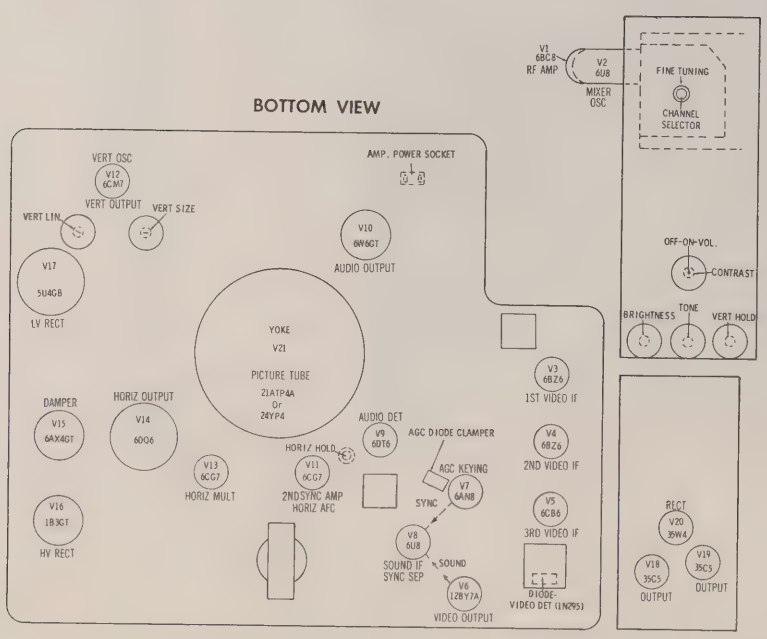
SENTINEL CHASSIS U75-01AA, U75-02AA,
V75-01AA, V75-02AA

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

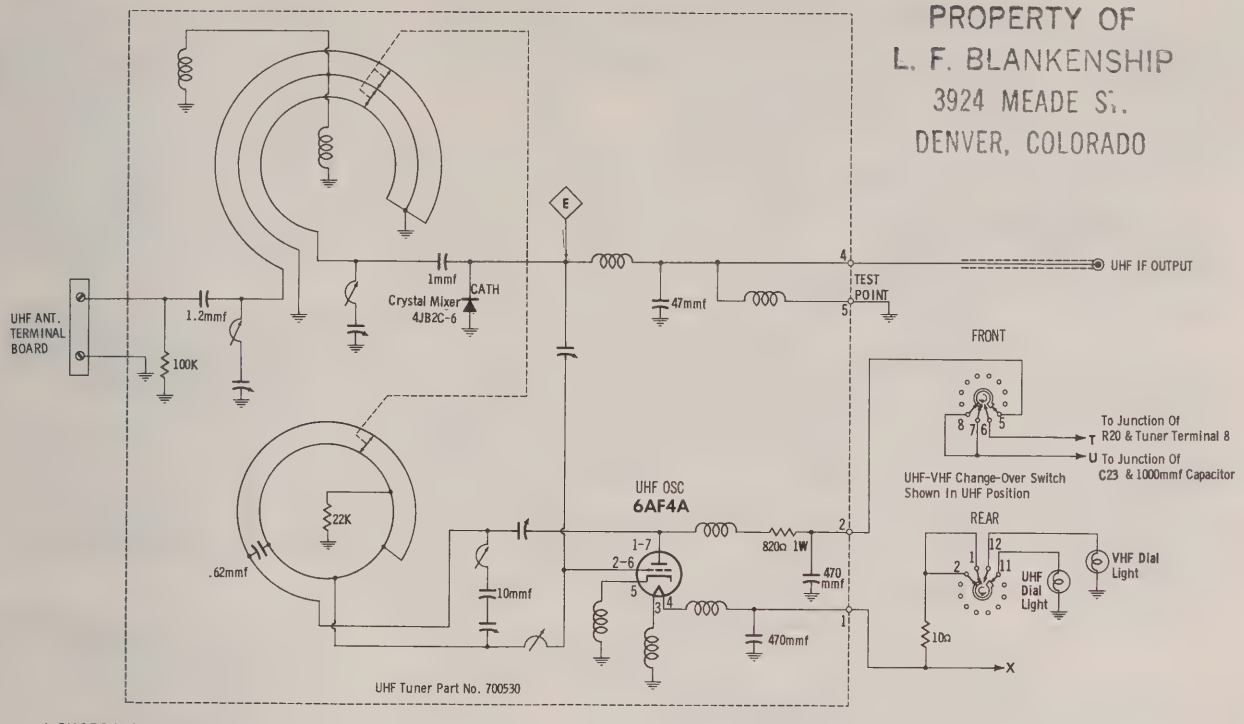
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC8	† 1500Ω	220K	INF	0Ω	.1Ω	INF	1.1Meg	0Ω	0Ω
V2	6U8	■ 5000Ω	360K	■ 10K	0Ω	.1Ω	† 4800Ω	0Ω	0Ω	10K
V3	6BZ6	75K	47Ω	0Ω	.1Ω	■ 1000Ω	■ 1000Ω	0Ω		
V4	6BZ6	70K	68Ω	0Ω	.1Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6CB6	.1Ω	120Ω	0Ω	.1Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	12BY7A	• 130Ω	470K	0Ω	0Ω	0Ω	.1Ω	† 4000Ω	† 18K	0Ω
V7	6AN8	■ 12K	27K	0Ω	0Ω	.1Ω	250K	† 53Ω	■ 220K	■ 0Ω
V8	6U8	■ 1.5Meg	.8Ω	22K	0Ω	.1Ω	■ 22K	220Ω	0Ω	2.2Meg
V9	6DT6	8Ω	680Ω	.1Ω	0Ω	† 320K	■ 10K	560K		
V10	6W6GT	NC	.1Ω	† 375Ω	† 200Ω	250K	TP	0Ω	¶	
V11	6CG7	■ 5600Ω	22K	2200Ω	0Ω	.1Ω	35K	350K	100K	0Ω
V12	6CM7	‡ 740Ω	NC	210Ω	0Ω	.1Ω	‡ 5Meg	• 570K	‡ 5Meg	• 7000Ω
V13	6CG7	† 100K	150K	1200Ω	.1Ω	0Ω	† 6200Ω	5Meg	1200Ω	0Ω
V14	6DQ6	TP	0Ω	TP	† 10K	470K	TP	.1Ω	0Ω	TOP CAP ‡ 85Ω
V15	6AX4GT	NC	NC	¶	NC	† 55Ω	TP	.1Ω	0Ω	
V16	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡ 258Ω
V17	5U4GB	NC	40K	NC	26Ω	NC	25Ω	NC	40K	
V18	21ATP4	0Ω	78K	PIN 6 10Ω	PIN 10 10Ω	PIN 11 390K	PIN 12 .1Ω			
V19	35C5	100Ω	10K	0Ω	22Ω	10K	†† 1500Ω	†† 90Ω		
V20	35C5	100Ω	10K	22Ω	44Ω	10K	†† 1500Ω	†† 80Ω		
V21	35W4	TP	TP	125Ω	170Ω	200Ω	NC	¶		

NC NO CONNECTION
TP TIE POINT
■ MEASURED FROM 135 VOLT SOURCE.
† MEASURED FROM PIN 2 OF V17.
‡ MEASURED FROM PIN 3 OF V15.
†† MEASURED FROM PIN 7 OF V20.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.



TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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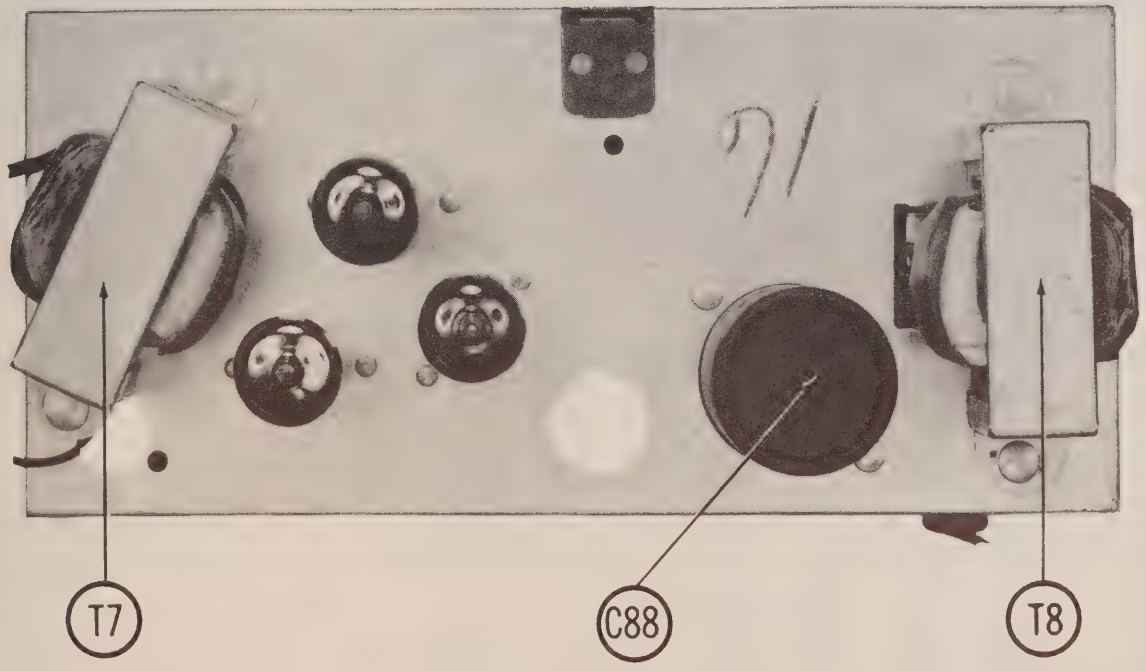
ALTERNATE TUNER SCHEMATIC



AMPLIFIER CHASSIS TOP VIEW

SET 366 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6BC8	
V3	Mixer-Oscillator	6U8	
V3	1st Video IF Amp.	6BZ8	
V4	2nd Video IF Amp.	6BZ8	
V5	3rd Video IF Amp.	6CB6	
V6	Video Output	12BY7A	
V7	AGC Keying-1st Sync Amp	6AN8	
V8	Sound IF Amp.-Sync Sep	6U8	
V9	Audio Det.	6DT6	

ITEM No	USE	TYPE	NOTES
V10	Audio Output	6W6GT	
V11	2nd Sync Amp -Horiz. AFC	6CQ7	
V12	Vert Osc.-Vert Output	6CM7	
V13	Horiz Mult	6CG7	
V14	Horiz Output	6DQ6	
V15	Damper	6AX4GT	
V16	HV Rectifier	1B3GT	
V17	LV Rectifier	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	SENTINEL PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V18	21ATP4A 24YP4	21ATP4A, 21ATP4-I 21ATP4A, 21ATP4-I 24YP4, 24YP4-I 24DP4 A 24DP4-A, 24DP4-I	Silver screen Aluminized	

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	VOLT	SENTINEL PART No	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	27002I-67	AFH3-416-80	CGH40P	FPH30.45	LTMT-20	CD-255	TVL-3529	
B	80	350			BRG0055		CTD-100-200	MT-25100		
C	4100	200								
C2	2	50	27002T-33	PR850V2	BSR5-50	TC303	TD-2-50	MT-0502	TVA-1301	
C3A	10	350	27004I-2	PR4-175	CBR1048	TCT3784	CTD-10-480	FM-4510	R3414 *	
B	60	200			CBR6035		TFC-60-250	6-150		
C4A	5	200	27004I-1	PR3-028	CBR435	TC30X	TC-5	MT-2504	R13H *	
B	80	200			CBR5025	TC85		6-150		
C5	20	500	27005I-1	PR8500V20	CBR2050	TC83	TD-20-500	S-315	TVA-1906	

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING CAP	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	15		25003T-94	6I 15	DB-150	LT5G15	ED-15	UC-5415	5GA-G15	
C7	15		25007-94	6I 15	DB-150	LT5G15	ED-15	UC-5415	5GA-G15	
C8	39		25017S-20	NT50-6I 39	TCN-39	CI5Q2S1U	TCT-39		5TCU-G39	N750
C9	39		25017S-20	NT50-6I 39	TCN-39	CI5Q2S1U	TCT-39		5TCU-G39	N750
C10	10		25012S-157	NP0-6I 10	TCZ-10	CI5Q4C	TCC-10	UC-541	5GA-G	
			25018S-5							
C11	470		25017S-6	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	470		25017S-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C13	18		25018S-4							
C14	1500		25017S-10	BPD-0015	DD-152	BYA10DI5	ED-0015	DC5215	5HK-D15	
C16	15		25020T-6	6I 15	DB-150	LT5G15	ED-15	UC-5415	5GA-G15	
C17	6.8		25021S-68	NP0-6I 6.8	TCN-6R8	CI0Y6SC	TCC-6R8	ZT-6868	5TCU-V68	
C18	1.2		25032S-115	NP0-6I 1.0	TCN-1		TCC-1			
C19	36		25018S-5							
C20	470		25017S-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C21	100		25017S-24	BPD-0001	DD-101	LJ2T1	ED-100	UC-531	5GA-T1	
C22	470		25017S-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C23	470		25017S-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	Note 1
C24	10		25008S-135	NP0-6I 10	DD-100	LT5G	ED-10	UC-541	5GA-G	N750
			25008S-144							N2200
C27	470		25017S-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C28	1500		25017S-10	BPD-0015	DD-152	BYA10DI5	ED-0015	DC5215	5HK-D15	
C29	56		25017S-9	NP0-6I 56	TCZ-56	CI5Q6SC	TCC-56			NP0
C32	470		25020T-50	6I 470	DB-471	LT5T47	ED-470	UC-5347	5GA-T47	
C33	15			NP0-6I 15	TCZ-15	CI5Q1SC	TCC-15		5TCC-Q15	NP0
C34	820		25017S-38	NP0-6I 820	DD-821	LJ2T82	ED-820			
C35	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C36	15			NP0-6I 15	TCZ-15	CI5Q4C	TCC-15		5TCC-Q15	NP0
C37	470		25015S-1090	1464-00047		5R5T47	ED-470	UC-5347	5GB-347	
C38	680		25020T-51	6I 680	DB-681	LT5T68	ED-680	UC-5368	5GA-T68	
C39	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C40	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C41	.1	200	25020S-13	P388M-1	DF-104	CUB4P1		GEM-401	5TM-P1	
C42	33		25020S-146	6I 33	DB-330	LT5T33	ED-33	UC-5433	5GA-G33	
C43	5000		25017S-1	BPD-005	DD-502	BYA10D5	ED-005	DC5205	5HK-D5	
C44	470		25020T-50	6I 470	DB-471	LT5T47	GP-470	UC-5347	5GA-T47	
C45	.1	400	25021S-13	P488M-1	DF-104	CUB4P1		GEM-401	5TM-P1	
C46	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C47	220		25017S-37	BPD-00022	DD-221	LJ2T22	ED-220	UC-5322	5GA-T22	
C48	680		25017S-38	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C49	10		25008S-155	NP0-6I 10	TCZ-10	CI5Q1C	TCC-10	ZT-541	5TCC-Q1	5%
C50	470		25020T-50	6I 470	DB-471	LT5T47	GP-470	UC-5347	5GA-T47	
C51	1000		25020T-53	6I 1000	DB-102	BYA82I	GP-1000	DC521	5HK-D1	
C52	1000		25020T-52	5I 1000	DB-102	BYA82I	GP-1000	DC521	5HK-D1	
C53	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C54	10 00		25017S-14	BPD-001	DD-103	BYA82I	ED-1000	DC521	5HK-D1	
C55	.47	100	25017S-12	P388N-47		CUB3P47		GEM-3047	5TM-P47	
C56	5000		25017S-1	BPD-005	DD-502	BYA10D5	ED-005	DC5205	5HK-D5	
C57	68		25008S-147							N075
C58	5000		25017S-1	BPD-005	DD-502	BYA10D5	ED-005	DC5205	5HK-D5	
C59	10000		25017S-2	BPD-01	DD-103	BYA8SI	ED-01	DC531	5HK-S1	
C60	1000		25020T-53	5I 1000	DB-102	BYA82I	GP-1000	DC521	5HK-D1	
C61	5000		25017S-1	BPD-005	DD-502	BYA10D5	ED-005	DC5205	5HK-D5	
C62	10000		25017S-2	BPD-01	DD-103	BYA8SI	ED-01	DC531	5HK-S1	
C63	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C64	.0047	400	25021S-5	BPD-00047	DD-472	CUB4D47	GP-4700	GEM-4247	4TM-D47	
C65	.022		25017S-31	BPD-003	DD-223	CUB4D22	GP-22	GEM-4222	4TM-D22	
C66	680		25017S-38	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C67	.0047	500	25021S-9	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C68	.047	200	25020S-11	BPD-05	DF-503	CUB3S47		GEM-3147	3TM-S47	
C69	.047	400	25021S-11	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C70	.022	400	25021S-10	BPD-02	DF-223	CUB4S22	ED-02	GEM-4122	4TM-S22	
C71	.022	400	25021S-9	BPD-02	DF-223	CUB4S22	ED-02	GEM-4122	4TM-S22	
C72	.047	400	25021S-11	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C73	.047	400	25020T-50	5I 470	DB-471	BYA10T47	GP-470	UC-5347	5GA-T47	
C74	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C75	.0022	400	25021S-3	BPD-0022	DE-222	CUB4D22	GP-2200	GEM-4222	4TM-D22	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING CAP	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	REPLACEMENT DATA CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No.	NOTES
C76	01	400	25021I-7	BPD-01	DD-103	CUB4S1	GP-10000	GEM-451	4TM-S1	
C77	1000		25017S-14	BPD-001	DD-102	BYA82I	ED-1000	DC521	5HK-D1	
C78	390		25015S-1089	1464-00039		1R5T39			M5-339	
C79	3900		25015S-1072	1464-00039		1R5T39			M5-339	
C80	470		25015S-1090	1464-00047		1R5T47			M5-347	
C81	5000		25017S-1	BPD-005	DD-502	BYA10D5	ED-005	DC535	5HK-D5	
C82	047	400	25021I-12	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C83	082	200	25021S-17			CUB3S8			3TM-S8	
C84	150	3000	25017S-42	HVD-30-150	D3D0-150	HVA30Q15			30GA-715	
C85	56	2000	25017S-33	HVD-30-56	D3D0-690	HVA30Q68		DC30468		
C86	047	400	25021I-11	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C87A	10000	1500	25021S-3	DAC-27	DA1E-103	HVE15S1		GEM-1511	B1L-S10	
B	10000	1500		DAC-27	DA1E-103	HVE15S1		GEM-1511	B1L-S10	

Note 1. Not used in some versions.

CONTROLS

ITEM No	RATING RESIST	WATTS	SENTINEL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	32065S-2				TA56R	Contrast - Tap ② 300Ω
B	330K	½					TA33K	Volume - Tap ① 100K
C	Switch							
R3A	5Meg	½	32065S-1	B-87	A47-5Meg-6	CU-141	TA58R	Brightness
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R2A	500K	½	32013S-13	B-86	A47-500K-Z	QZ3-153	TA59A	Tone
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R4A	1Meg	½	32065S-3	B-88 *	CU-153 *	CU-153 *	TA57L *	Vert. Hold with 350K stop
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R5	6Meg	½	32065S-2					Vert. Size
R6	750Ω	½	22055S-3				PTA75L	Vert. Lin.

* Use 470K resistor in series with right hand terminal .

RESISTORS

All wattages ½ watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA SENTINEL PART No.	IRC PART No.	NOTES
R7	100K		25104-86	BTS-100K	
R8	470K		25104-94	BTS-470K	
R9	470K		25104-94	BTS-470K	
R10	22000		25104-73	BTS-2200	
R11	330K		25104-92	BTS-330K	
R12	330K		25104-92	BTS- 33K	
R13	3300Ω		25104-85	BTS-3300	
R14	680Ω		25104-80	BTS-680	
R15	10K		25104-74	BTS-10K	
R16	180K		25104-89	BTS-180K	
R17	4700Ω		25104-78	BTS-4700	
R18	10K		25104-74	BTS-10K	
R19	150Ω		25104-53	BTS-150	
R20	47K	1	25096-175	BTA-4700	Note 1
R21	330Ω		25104-56	BTS-330	
R22	1500Ω	1	25104-95	BTA-1500	
R23	560K		25104-95	BTS-560K	
R24	8.2Meg	5%	25094-255	BTS- 8.2Meg 5%	
R25	390K 5%		25094-321	BTS-390K 5%	
R26	100K 5%		25094-207		
R27	120K		25104-87		
R28	8.2Meg	5%	25094-255	BTS- 8.2Meg 5%	
R29	330K		25104-90	BTS- 330K	
R30	68K 5%		25094-203	BTS- 68K 5%	
R31	1000Ω		25104-13	BTS-1000	
R32	5600Ω		25104-72	BTS-5600	
R33	1000Ω		25094-13	BTS-1000	
R34	470Ω		25104-66	BTS-47	
R35	1000Ω		25094-13	BTS-1000	
R36	18K		25104-77	BTS-183	
R37	1000Ω		25094-13	BTS-1000	
R38	68Ω		25104-65	BTS-68	
R39	12K			BTS-123	Note 2 Note 1
R40	12K				
R41	1000Ω		25094-13	BTS-1000	
R42	120Ω		25104-51	BTS-120	
R43	4700Ω 5%		25094-175	BTS-4700 5%	
R44	470K		25104-94	BTS-470K	
R45	120Ω		25104-51	BTS-120	
R46	18K	3	25106-77	PWT-183K	
R47	4000Ω	5	24007I-19	PWT-4000	
R48	150K		25104-88	BTS-150K	

Note 1. Not used in some versions.
Note 2. Some versions may use a 18K in this application.

TRANSFORMER (POWER)

ITEM No	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	340VCT	5V	6.3V	300094-1				38RB①	
	① 1.5A	② .240A	③ 2A	④ 9.8A						

① Use universal mounting brackets and tape 6.3V ④ 1.2A winding

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Osc.	32080I-4							
T3	Vert. Output	32080-1	21804	A-3037	32271	V313	A-5123	28S52	A-102X
T4	Yoke/Horiz. (90.5MS) (90°) Vert. (44MS) Alt. Yoke	27082S-4	DF907①	MDF-45①	32351 ①	Y90F15/43 ①	DY-15A ①	Y-15 ①	Y-6L & NW9
		26122S-1	DF907①	MDF-45①	32351 ①	Y90F15/43 ①	DY-16A ①	Y-16 ①	Y-6L & NW9
M7	Yoke Rear Cover & Centering Device	26123S-1							TC-4
T5	Horiz. Output	32081-1							

① Use original yoke rear cover and centering device and original damping network, if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	SEC	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	2500Ω	3-4Ω	32080-2	Z1111	A-3928	A-3976	23R46	S-1X	

COILS (RF-IF)

ITEM No.	USE	SENTINEL PART No.	NOTES
L1	IF Trap	36082O-1	
L3	IF Trap	36083I-1	
L4	Ant. Trans.	36049-3	
L5	RF Choke	36080I-8	
L6	4.5MC Trap		
L7	IF Choke Coil	36084I-1	
L8	1st. Sound IF	36049-1	

ITEM No.	USE	SENTINEL PART No.	NOTES
L6	RF Choke	36080I-9	
L7	RF Choke	36080I-1	
L8	Mixer Plate Coil	36084O-1	

ITEM No.	USE	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L8	1st. Video IF	36123O-1			6323	Includes 47.25MC Trap
L10	2nd. Video IF	36123J-1			6321	Includes 41.25MC Trap
L11	3rd. Video IF	36123J-1				11 Microhenries
L12	Resonant Choke	36120-1				
L13	Shunt Peaking Coil	36123A-3	19-3500	TV-185	6176	500 Microhenries
L14A	4.5MC Trap	36124-1				
B	1st. Sound IF					
L15	Series Peaking Coil	36123A-3	19-3250 *	TV-185 *	6181 *	380 Microhenries, wound on 6800Ω resistor
L16	Shunt Peaking Coil	36123A-4	19-3280	TV-185	6181	295 Microhenries
L17	Shunt Peaking Coil	36123A-5			6148 A	725 Microhenries, wound on 6800Ω resistor
L18	Series Peaking Coil	36123A-5	19-3128 *		6183 *	130 Microhenries, wound on 3300Ω resistor
L19	2nd. Sound IF	36121J-1				
L20	Clamp Coil	36120T-1				
L21	RF Choke					8.5 Microhenries

* Parallel with 6800Ω resistor.
▲ Parallel with 8800Ω resistor.
* Parallel with 3300Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L22	95Ω		36120S-1	19-1576 *	TV-163 *	6310 *		28H77 *	

* Drill new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000 ▲)	REPLACEMENT DATA SENTINEL PART No.	Halldorson PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L23	240A	83Ω	1 HY.	32080S-3 ①		C5037 ②	C-3996 ③	C-3227	28C44 ②	C-34X

▲ Alternate part #32080S-3.
① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SENTINEL PART No.	REPLACEMENT DATA
K1	Sync Coupler	25MMF, 10000MMF, 150MMF, 2.2Meg, 470K	25018S-2	
K2	Vert. Integrator	2000MMF, 5000MMF, 5000MMF	25079S-1	Aerovox PA80N Centralab PC-104 Sprague 103C13 Erie 1405-01

SELENIUM RECTIFIER

ITEM No	RATING CURRENT (Measured)	SENTINEL PART No.	FEDERAL PART No.	REPLACEMENT DATA INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	550mA-1	1215		17I			AOC Clamper

CRYSTAL DIODES

ITEM No.	CRYS. TYPE	SENTINEL PART No.	REPLACEMENT DATA CBS PART No.	SYLVANIA PART No.	NOTES
M2	1N295 *		1N80	1N90	Video Det. (Pigtail)

* A1N84 may be used in some versions.

MISCELLANEOUS

ITEM No	PART NAME	SENTINEL PART No.	NOTES
M3	Pilot Light		#44 Type
M4	Tuner	700541-3	VHF
	Tuner	700530	UHF
M5	Crystal Det. Assy.	36120A-1	Includes 4th. Video IF, Peaking Coil, Caps. & M3
M6	Switch	36123S-1	TV-Phono Selector (Slide Type) (DBDT)
M7	Switch	36123-1	Includes yoke rear cover
M8	Ion Trap	36049J	
	Ion Trap	1B0247-1	UHF-VHF Change-over

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V19	Output	35C5	
V20	Output	35C5	

ITEM No.	USE	TYPE	NOTES
V21	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SENTINEL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C88A	■40	150	270023-26	AFH2-14	XB0141	FP212	TMD-11	D-060	TVL-2428
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C89	.015	200	250202-8	BPD-01	DD-103	CUB2S15	ED-01	GEM-4115	2TM-S15	
C90	.047	600	250201-11	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SENTINEL PART No.	IRC PART No.	
R92	47K			BTS-47K	Note 3
R93	2200Ω		230104-66	BTS-2200	
R94	10K		230104-74	BTS-10K	
R95	47K			BTS-47K	Note 3
R96	10K		230104-74	BTS-10K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SENTINEL PART No.	IRC PART No.	
R97	100Ω	1	230105-50	BTA-100	
R98	1500Ω		230104-64	BTS-1500	
R99	82Ω	5	240071-24		
R100	33Ω		230104-44	BTS-33	

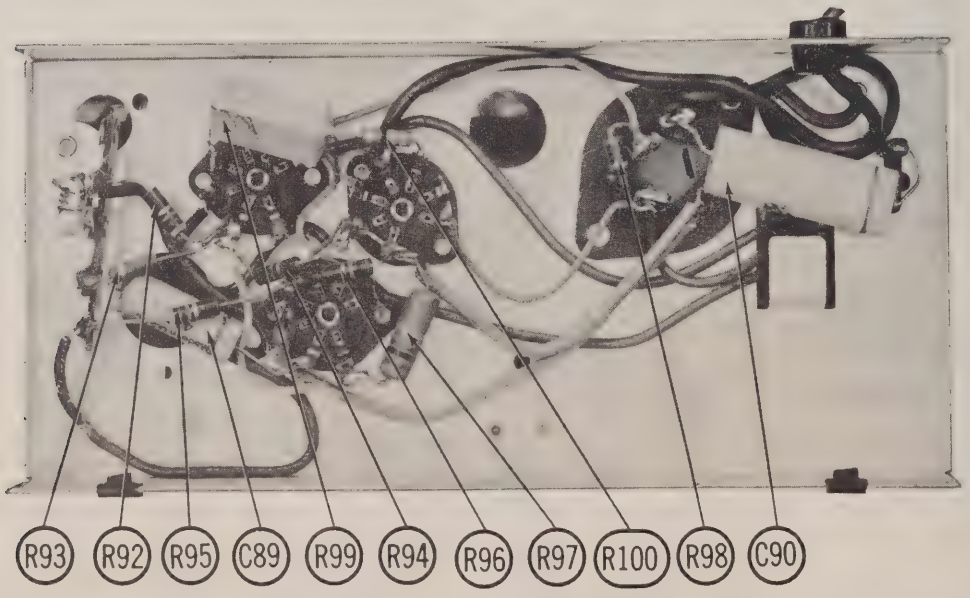
Note 3. Some versions may use a 68K in this application.

TRANSFORMER (INPUT)

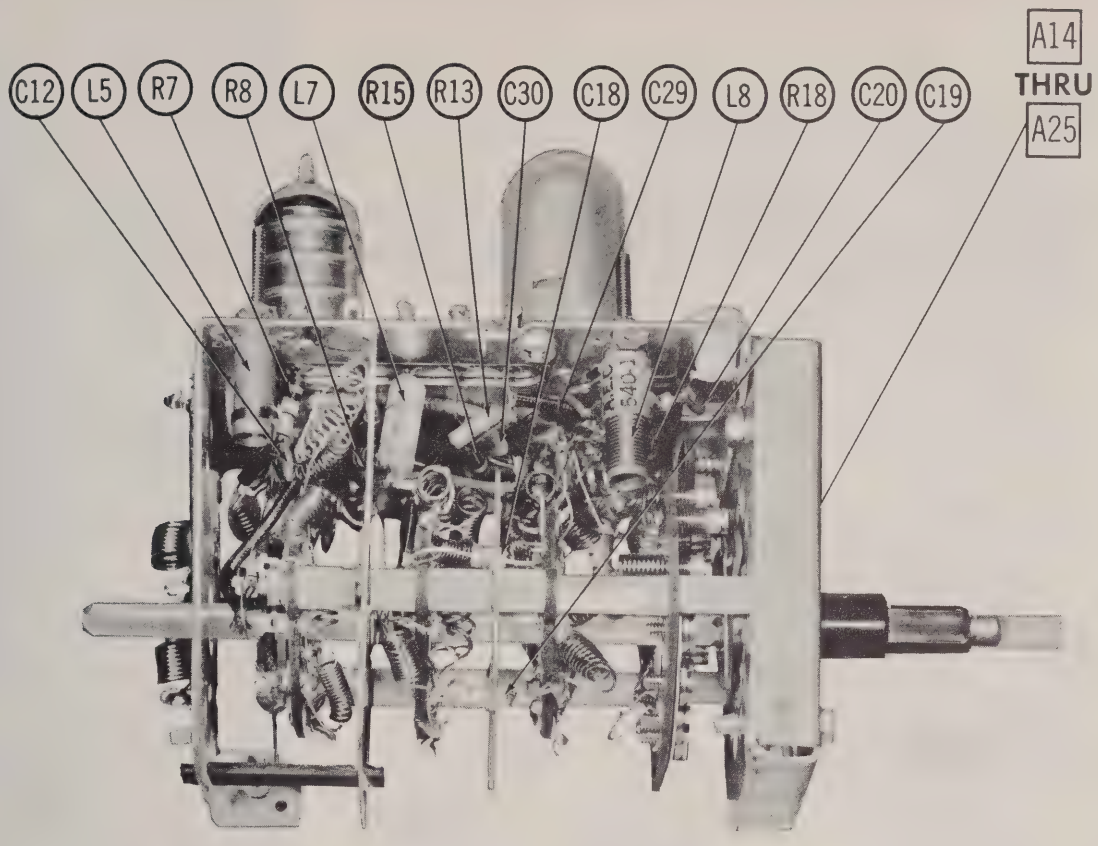
ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T7	1:	35	320272-1	Z1002	A-2901	A-3823		S-53X	

TRANSFORMER (AUDIO OUTPUT)

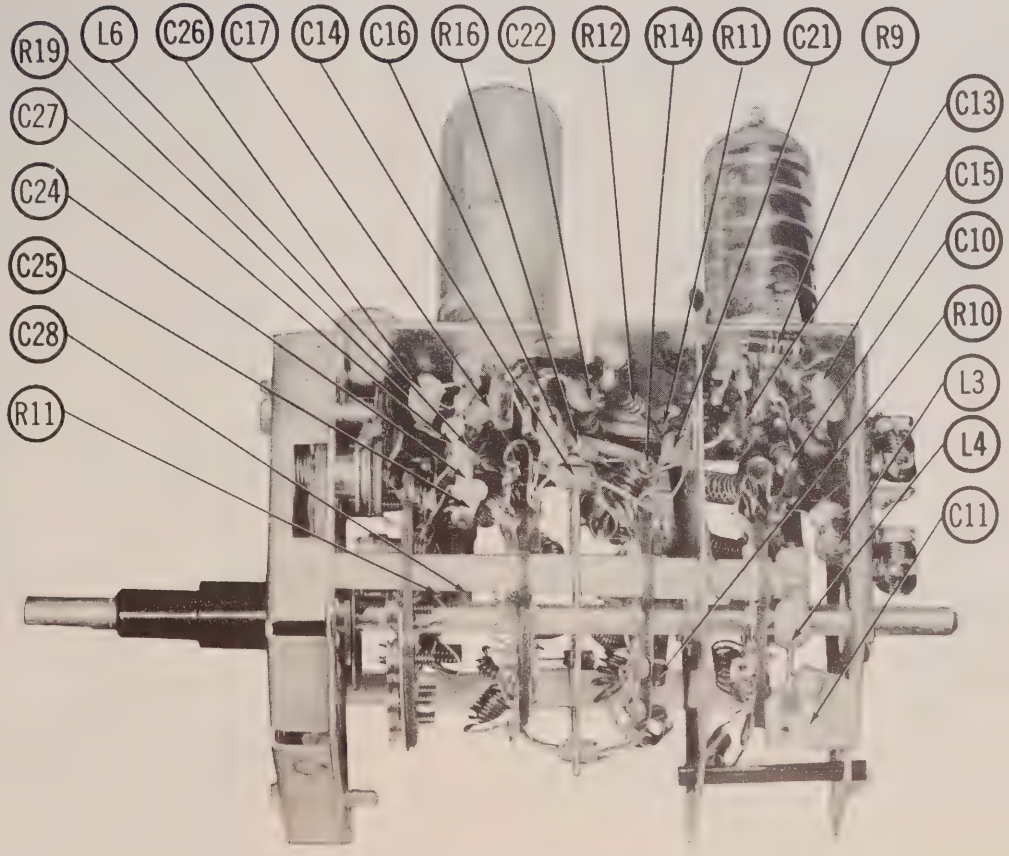
ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SENTINEL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T8	3850Ω	3-4Ω	320272-1	Z1002	A-2901	A-3823		S-53X	



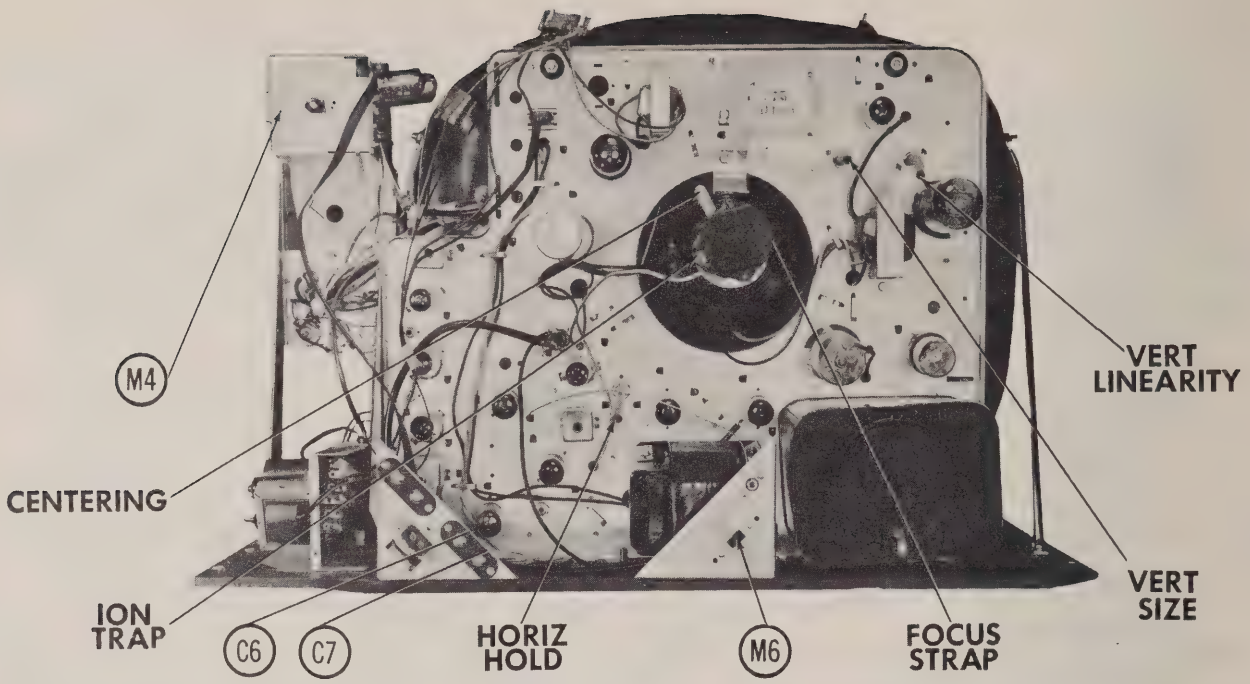
AMPLIFIER CHASSIS BOTTOM VIEW



RF TUNER-LEFT SIDE



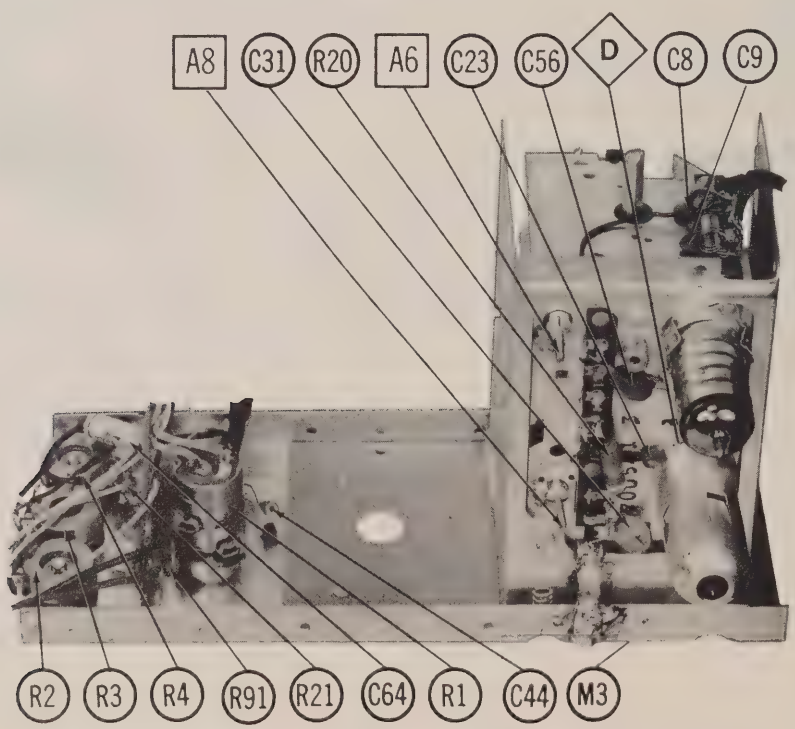
RF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.
2. Set the brightness and contrast controls for a normal picture.
3. Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.
4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.



TUNER TOP VIEW & CONTROL PANEL

SILVERTONE MODELS 7061, A, 7062, A, 7063, 7067, 7068 (Ch. 528.46200, 528.46220)

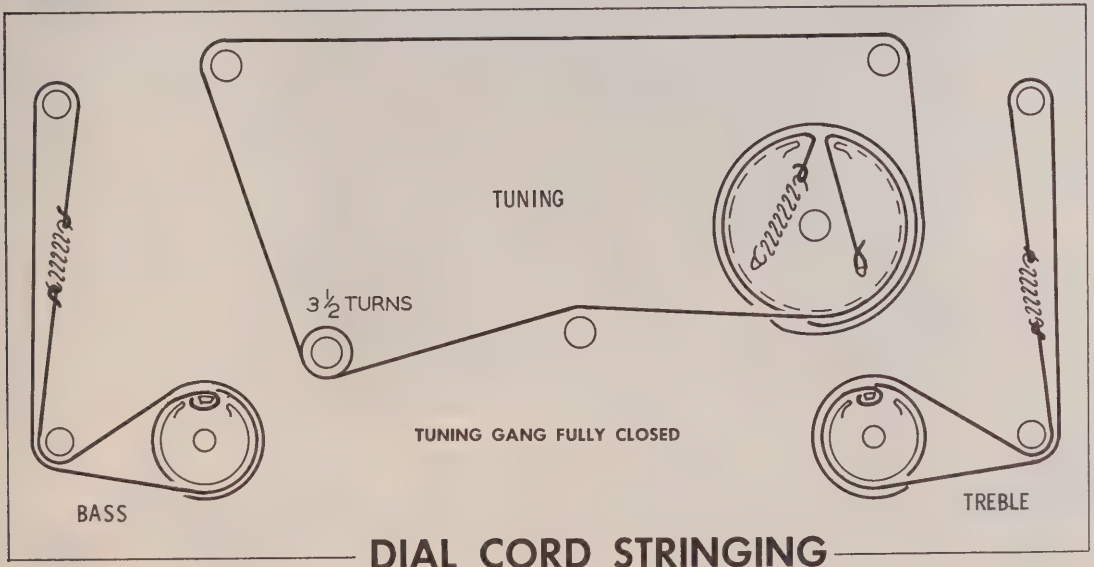
SILVERTONE MODELS 7061, A, 7062, A, 7063, 7067, 7068 (Ch. 528.46200, 528.46220)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS 7061, A, 7062, A, 7063, 7067, 7068 (Ch. 528.46200, 528.46220)

TRADE NAME	Silvertone Models 7035 (Kit Form), 7061, 7061A, 7062, 7062A, 7063, 7067, 7068			
	Receiver Chassis 528.46200 528.46220	Recorder Amp. 567.35015	Recorder Mech. Unit 567.34013	Record Changer 567.41002 567.41015 567.41102 567.41110
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.			
TYPE SET	AC Operated FM-AM Receiver With Tape Recorder & 4 Speed Automatic Record Changer			
TUBES	Eleven (Receiver Only)			
POWER SUPPLY	110-120 Volts AC-60 Cycles		RATING	.87 Amp. @ 117 Volts AC (95 Watts)

FOR SERVICE INFORMATION ON RECORDER AMPLIFIER CHASSIS - SEE SILVERTONE MODEL 7065 - PHOTOFACT SET 362 FOLDER 9
FOR SERVICE INFORMATION ON THE RECORDER MECHANICAL UNIT - SEE SILVERTONE MODEL 7074 - PHOTOFACT SET 350 FOLDER 17
FOR SERVICE INFORMATION ON THE RECORD CHANGER - SEE SILVERTONE CHASSIS 567.40000 - PHOTOFACT SET 365 FOLDER 13



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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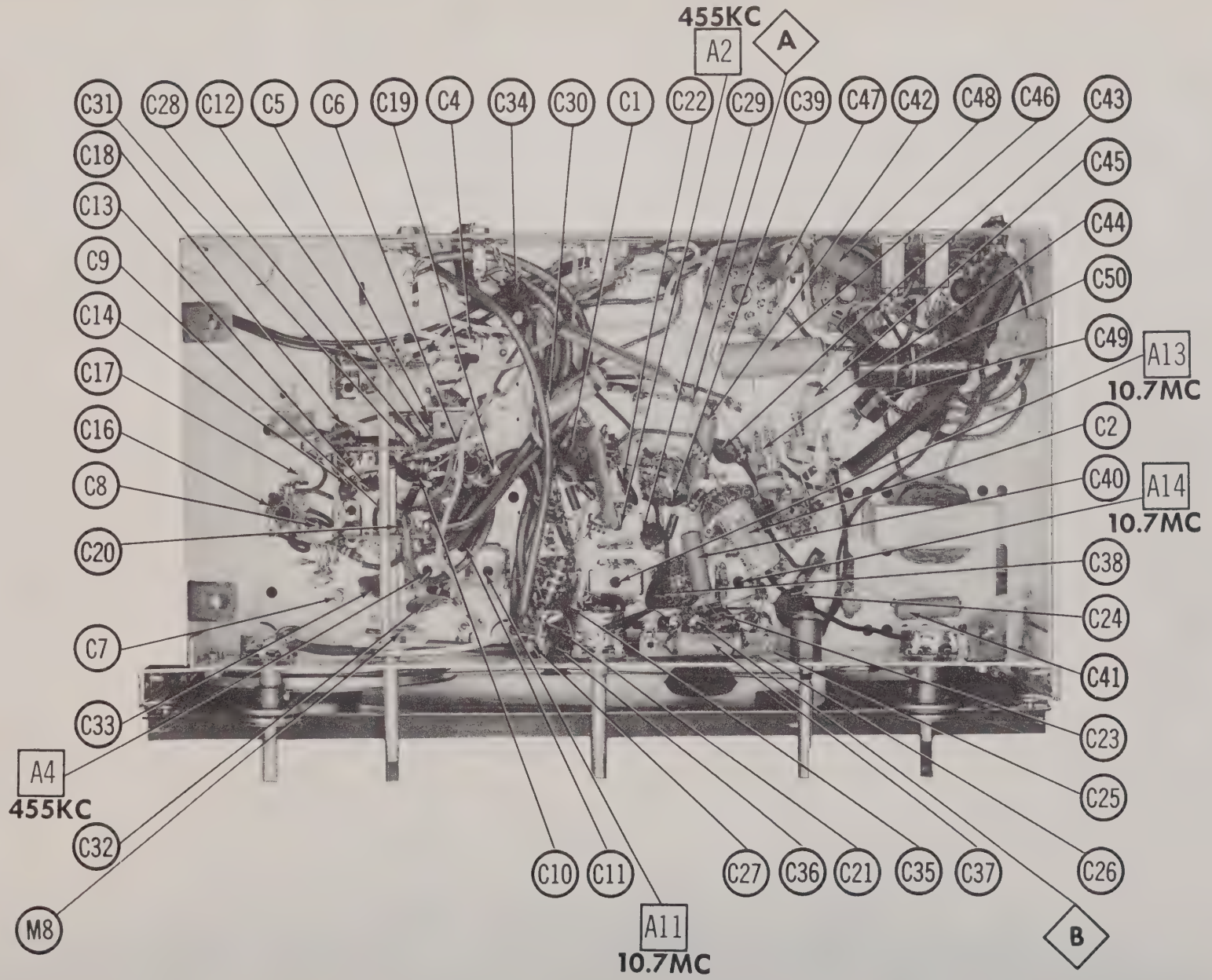
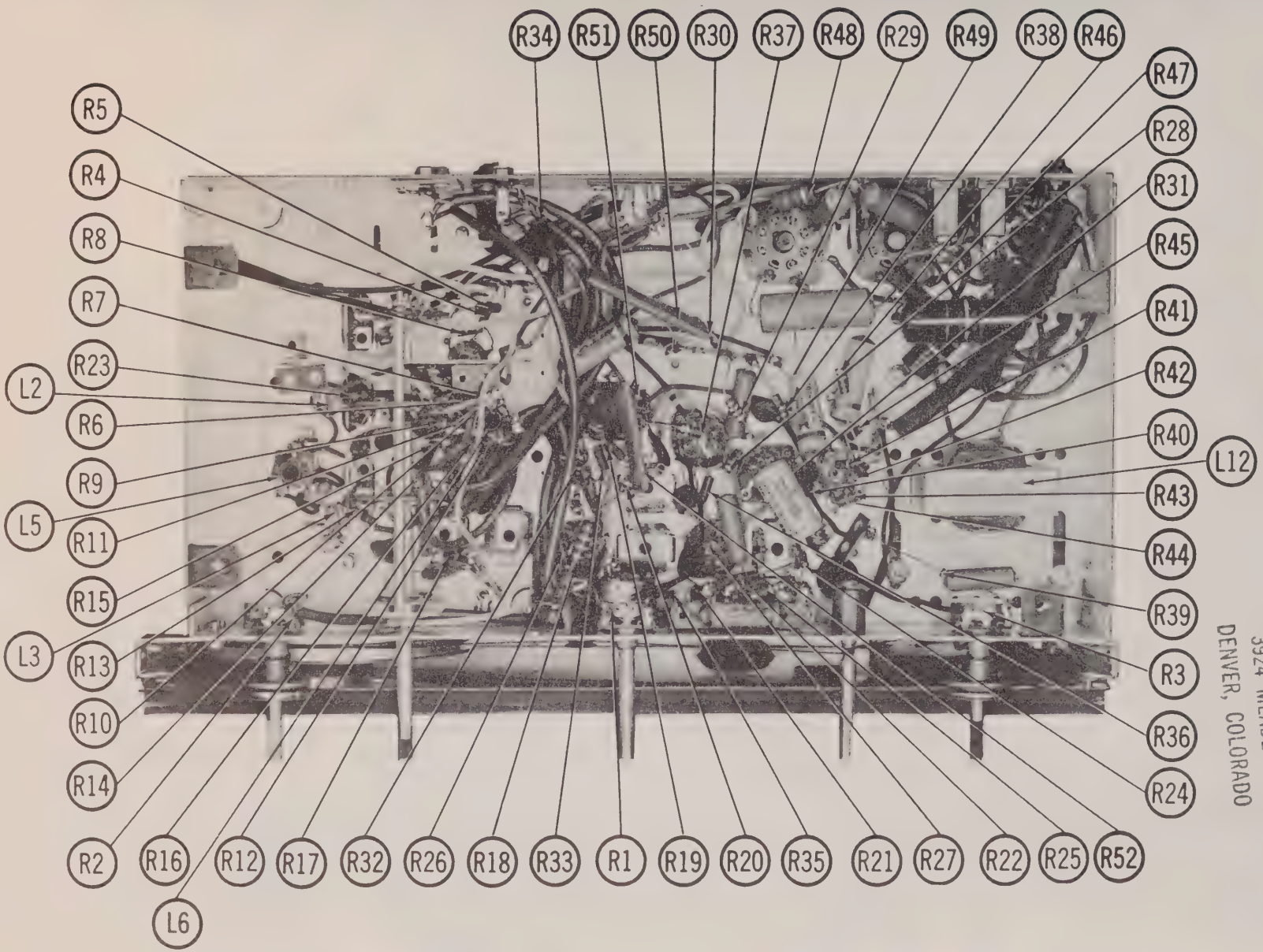


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



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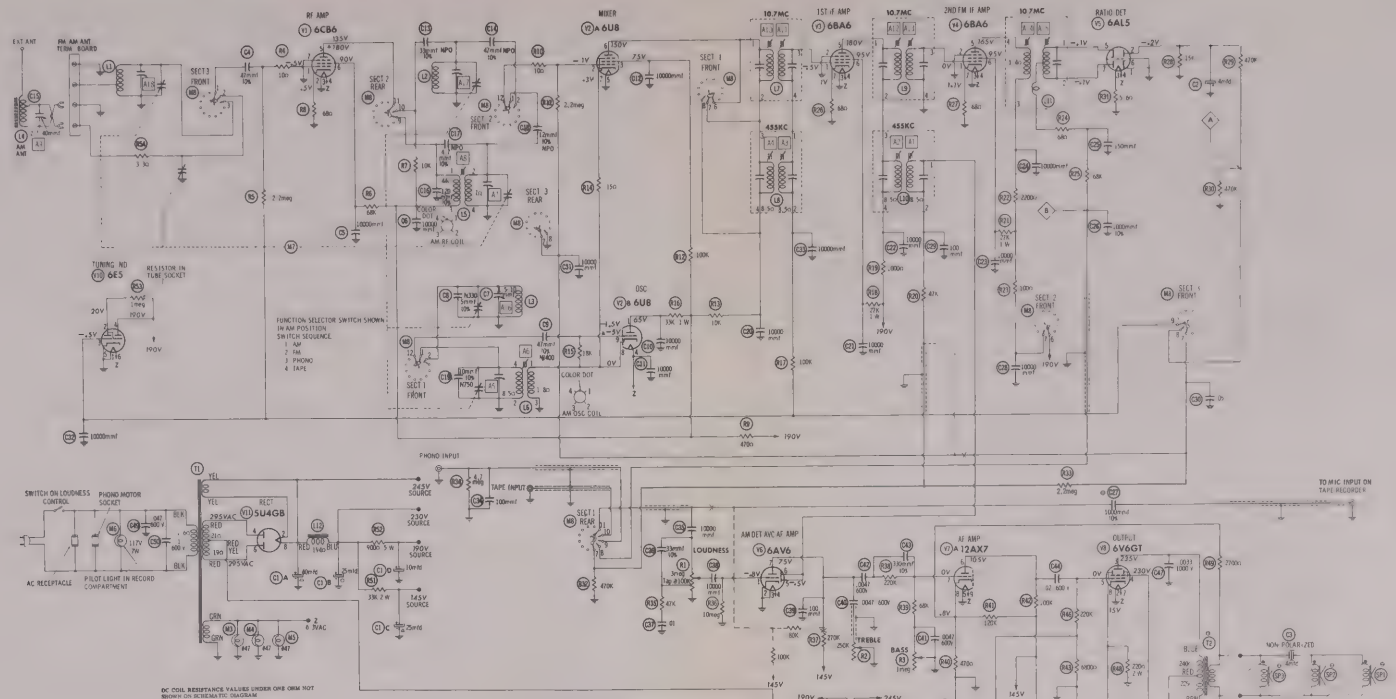
DENVER, COLORADO

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

SILVERTONE
MODEL 7035



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	■ 4.8Meg 2.6Meg	68Ω	0Ω	3Ω	†11R ■†1.14000	†69K	0Ω		
V2	6U8	†34K	■ 3.9Meg 150K	†100K	2Ω	0Ω	†11K	16Ω	1.8Ω	15K
V3	6BA6	■ 3.9Meg 150K	0Ω	0Ω	2Ω	†2000Ω	†28K	68Ω		
V4	6BA6	8Ω	0Ω	0Ω	2Ω	†3400Ω	†28K	68Ω		
V5	6AL5	0Ω	15K	5.6Ω	2Ω	1MΩ	0Ω	1MΩ		
V6	6AV6	10Meg	0Ω	0Ω	2Ω	515K	515K	†305K		
V7	12AX7	†133K	68000Ω	470Ω	0Ω	0Ω	†133K	1Meg	470Ω	2Ω
V8	6V6GT	TP	0Ω	†240Ω	†194Ω	220K	TP	2Ω	220Ω	
V9	6V6GT	TP	0Ω	†225Ω	†194Ω	220K	NC	2Ω	220Ω	
V10	6E5	0Ω	†1Meg	250K ■2.7Meg	†1090Ω	0Ω	2Ω			
V11	5U4GB	NC	20K(Min)	NC	2Ω	NC	19Ω	NC	20K(Min)	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V11
■ MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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366-11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Tone controls to Mid Range.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to AM RF stator lug on tuning gang. Low side to chassis.	455KC (400^Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	"	"	1620KC	"	"	"	A5	"
3	"	"	535KC	"	Tuning gang fully closed	"	A6	"
4	"	High side to AM Antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A7	"
5	"	"	600KC	"	600KC	"	A8	"
6		Loop	1400KC	"	1400KC	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. (A9 located on loop.) Repeat steps 2 thru 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	.005MFD	High side to FM RF stator lug on tuning gang. Low side to chassis.	10.7MC (unmod.)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A10, A11, A12, A13, A14	Adjust for maximum deflection.
8	"	"	"	"	"	DC probe to point (B). Common to point (A).	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 7 & 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7	.005MFD	High side to FM RF stator lug on tuning gang. Low side to chassis.	10.7MC (300KC swp)	FM	Point of non-interference	Vert Amplifier to point (A). Low side to chassis.	A10, A11, A12, A13, A14	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8	"	"	"	"	"	Vert Amplifier to point (B). Low side to chassis.	A15	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines. Repeat steps 7 & 8.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	.005MFD	High side to FM RF stator lug on tuning gang. Low side to chassis.	108.5MC	FM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A16	Adjust for maximum deflection.
10	300Ω Carbon Resistor	High side thru 300Ω to FM Antenna terminal. Low side to chassis.	106MC	"	106MC	"	A17, A18	Adjust for maximum deflection.
	Check dial calibration at 88, 98 and 106MC. If error is less than .3MC and RF circuits are tracking, no further alignment is necessary. If error is more than .3MC, proceed with step 11.							
11	300Ω Carbon Resistor	High side thru 300Ω to FM Antenna terminal. Low side to chassis.	88MC	FM	88MC	DC probe to point (A). Common to chassis.	L3	Adjust for maximum deflection by expanding or compressing coil turns.
12	"	"	108MC	"	108MC	"	A16	Readjust for maximum deflection.
13	"	"	106MC	"	106MC	"	A17, A18	Adjust for maximum deflection. Repeat steps 12 & 13 until desired settings are obtained.
14	"	"	"	"	"	"		Adjust FM RF rotor plates to receive 106MC signal at correct dial setting. Recheck A17 & A18 for maximum deflection.

FIG. 1

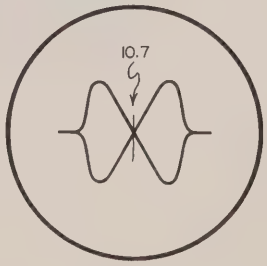


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6CB6	
V2	Mixer-Oscillator	6U8	
V3	1st. IF Amplifier	6BA6	
V4	2nd. FM IF Amplifier	6BA6	
V5	Ratio Detector	6AL5	
V6	AM Det.-AVC-AF Amp.	6AV6	

ITEM No.	USE	TYPE	NOTES
V7	AF Amp.-Phase Inverter	12AX7	
V8	Output	6V6GT	
V9	Output	6V6GT	
V10	Tuning Indicator	6E5	
V11	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	18-18-3	AFH4-04	DO032	FP396.14		Q-060	R2428 *
B	■25	350				TC62		MT-4510	
C	▲25	350							
D	10	350							
C2	4	50	18-25-0	PRS150V4	BBR4-50	TC30	TD-4-50	FM-0504	TVA-1402
C3	4	150NP	18-95	PRS450VNP4	BBR8-150 † BBR8-150	TC41 † TC41	TD-8-150 † TD-8-150	FM-1508 † FM-1508	R1251 *

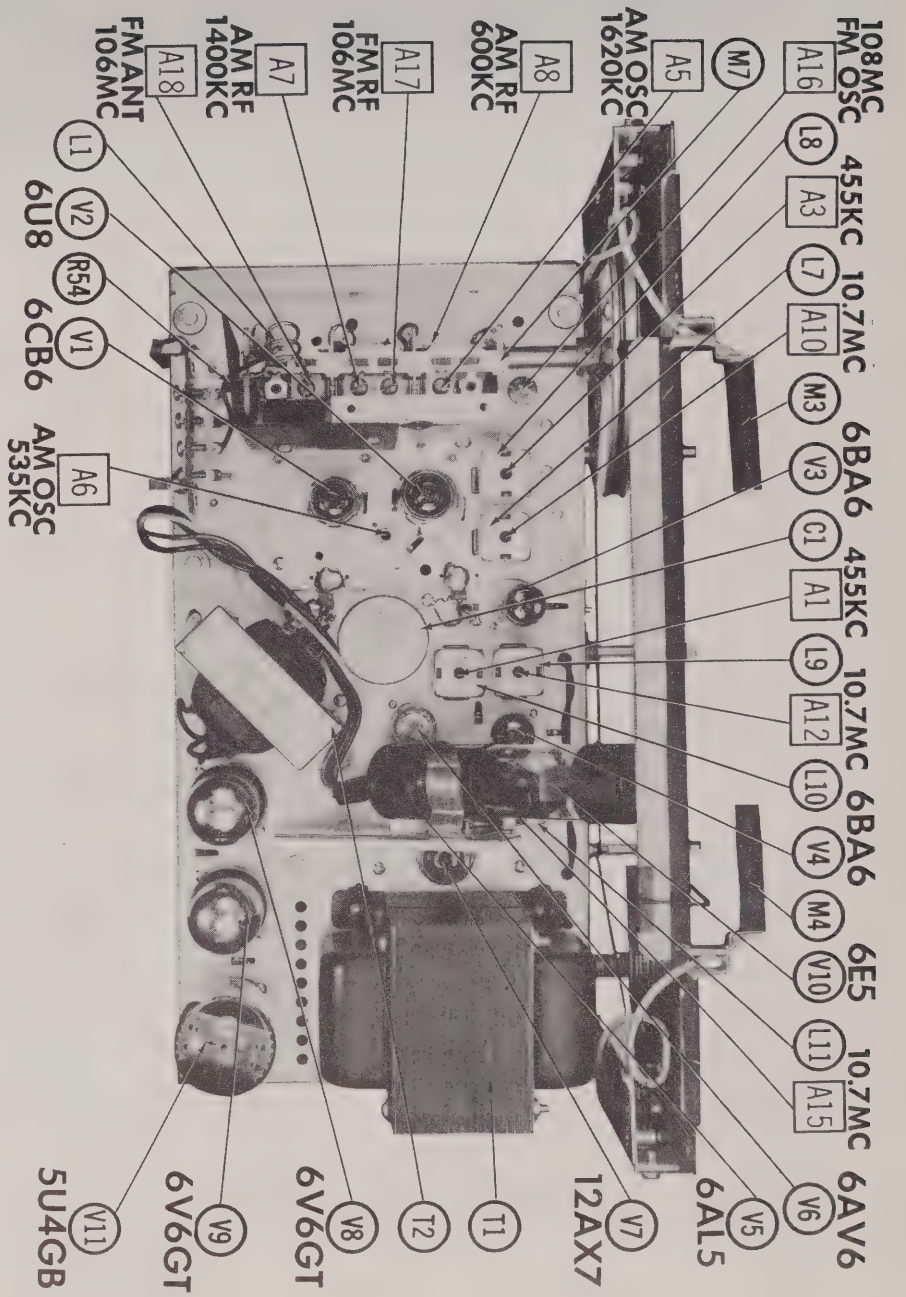
* Non-catalog item.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	47		15-470611	NP0-SI 47	TCZ-47	CTA6Q47C	TCO-47		5TCC-Q47	NP0 10%
C5	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	1.5-10		20-151		829-10					
C8	5		15-509612							N330 10%
C9	47		15-470115							N1400 10%
C10	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C11	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C12	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C13	33		15-330611	NP0-SI 33	TCZ-33	CTA6Q33C	TCO-33	ZT-5433	5TCC-Q33	NP0 10%
C14	47		15-470611	NP0-SI 47	TCZ-47	CTA6Q47C	TCO-47		5TCC-Q47	NP0 10%
C15	2.7-40		19-256							
C16	120		15-12161	1469-00012	D6-121	L10T12	ED-120		MS-312	10%
C17	4.7		15-479611	NP0-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	NP0 10%
C18	12		15-120611		TCZ-12	CTA6Q12C	TCO-12			NP0 10%
C19	10		15-100614	N750-SI 10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750 10%
C20	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C21	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C22	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C23	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C24	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C25	150		15-15116	BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C26	1000		15-10261	1464-001		1R5D1	ED-1000	MCB255	MS-21	10%
C27	1000		15-10261	1464-001		1R5D1	ED-1000	MCB255	MS-21	10%
C28	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C29	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C30	.05	200	16-50323	BPD-05	DF-503	CUB2S47		GEM-415	2TM-S5	
C31	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C32	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C33	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C34	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C35	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C36	33		15-33061	1469-000033	D6-330	L10Q33	ED-33	ZT-5433	MS-433	10%
C37	.01	400	16-10343	BPD-01	DD-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C38	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C39	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C40	.0047	600	16-47257	BPD-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C41	.0047	600	16-47257	BPD-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C42	.0047	600	16-47257	BPD-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C43	330		15-33111	1464-00033	D6-331	L10T33	ED-330		MS-333	10%
C44	.02	600	16-20353	BPD-02	DD-203	CUB6S2	ED-02	GEM-612	6TM-S2	
C45	.02	600	16-20353	BPD-02	DD-203	CUB6S2	ED-02	GEM-612	6TM-S2	
C46	.047	600	16-47353	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C47	.0033	1000	16-33268	P1088N-0033		CUB16D33		GEM-16233	MB-D33	
C48	.0033	1000	16-33268	P1088N-0033		CUB16D33		GEM-16233	MB-D33	
C49	.047	600	20-647-1	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C50	.1	600	20-611-1	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3Meg	½	24-226					Loudness, Tap@ 100K
B	Switch							
R2A	250K	½	26-134	B-51	A47-250K-Z	Q13-130	U44	Treble
B	Shaft			Not req.	FS-3	Not req.	Not req.	
R3A	1Meg	½	26-133	B-70	A47-1Meg-Z	Q13-137	U53	Bass
B	Shaft			Not req.	FS-3	Not req.	Not req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R4	10Ω		60-10001	BTS-10	
R5	2.2Meg		60-22502	BTS-2.2Meg	
R6	68K		60-68301	BTS-68K	
R7	10K		60-10301	BTS-10K	
R8	68Ω		60-68001	BTS-68	
R9	470Ω		60-47101	BTS-470	
R10	10Ω		60-10001	BTS-10	
R11	2.2Meg		60-22502	BTS-2.2Meg	
R12	100K		60-10401	BTS-100K	
R13	10K		60-10301	BTS-10K	
R14	15Ω		60-15001	BTS-15	
R15	18K		60-18301	BTS-18K	
R16	33K	1	60-33311	BTA-33K	
R17	100K		60-10401	BTS-100K	
R18	27K	1	60-27311	BTA-27K	
R19	1000Ω		60-10202	BTS-1000	
R20	47K		60-47301	BTS-47K	
R21	27K	1	60-27311	BTA-27K	
R22	2200Ω		60-22202	BTS-2200	
R23	100Ω		60-10102	BTS-100	
R24	68Ω		60-68001	BTS-68	
R25	68K		60-68301	BTS-68K	
R26	68Ω		60-68001	BTS-68	
R27	68Ω		60-68001	BTS-68	
R28	15K		60-15301	BTS-15K	
R29	470K		60-47401	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R30	470K		60-47401	BTS-470K	
R31	5.6Ω		60-56901		
R32	470K		60-47401	BTS-470K	
R33	2.2Meg		60-22502	BTS-2.2Meg	
R34	4.7Meg		60-47502	BTS-4.7Meg	
R35	47K		60-47301	BTS-47K	
R36	10Meg		60-10602	BTS-10Meg	
R37	270K		60-27401	BTS-270K	
R38	220K		60-22401	BTS-220K	
R39	68K		60-68301	BTS-68K	
R40	470Ω		60-47101	BTS-470	
R41	120K		60-12401	BTS-120K	
R42	100K		60-10401	BTS-100K	
R43	6800Ω		60-68202	BTS-6800	
R44	470Ω		60-47101	BTS-470	
R45	100K		60-10401	BTS-100K	
R46	220K		60-22401	BTS-220K	
R47	220K		60-22401	BTS-220K	
R48	220Ω	2	60-22121	BTB-220	
R49	2700Ω		60-27201	BTS-2700	
R50	80Ω 5%	10	61-32		
R51	33K	2	60-33321	BTB-33K	
R52	900Ω	5	61-17	1 3/4 AA-900	
R53	1Meg		60-10502		
R54	3.3Ω		60-33901		

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .87A	560VCT @ .128A	5VAC @ 3A	6.3VAC @ 3.9A	80-385	P9312 ① ③		PC8405 ① ③	22R05 ① ②	

① Tape center tap on 6.3V winding
② Use universal mounting brackets
③ Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6600Ω CT	6-8Ω	80-384 80-364 ①	Z1009 ②	A-2905	A-3880	22S58 ②	S-55X	① May be used as an alternate Part# in Models 7061, 7062, 7063 ② Drill new mounting hole

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	013103 ①③		① Alternate Part #79-471 used in Models 7067, 7068
SP2	5"	PM	6-8Ω	013103 ①③		② Alternate Part #79-470 used in Models 7067, 7068
SP3	12"	PM	6-8Ω	013180 ②	12A10X	③ Connect in parallel and phase

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Antenna Coil	10-3-1				
L2	FM RF Coil	10-24-1				
L3	FM Osc. Coil	10-3-3				
L4	Loop Stick	84-2530		BC-418		Includes C-15
L5	AM RF Coil	10-1-1	14-1076 *			* Use full secondary
L6	AM Osc. Coil	10-2-4	14-1077		71-Osc.	
L7	1st. FM IF	10-44-2	16-3487	FM-254	1463	
L8	1st. AM IF	10-46-2	16-6758	BC-352	12-C1	
L9	2nd. FM IF	10-44-2	16-3487	FM-254	1463	
L10	2nd. AM IF	10-46-2	16-6758	BC-353	12-C2	
L11	Ratio Det.	10-15-0	17-3498	FM-255	1465	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L12	.046A	194Ω	4.2 Hy.	33-243	C5012	C-2977	C-1706 ①	26C42	C-4X ①

① Drill new mounting hole

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	720126	53-T	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M2	720134	† S-61 or ♦ S-6ISD or ♦ S-6ID	† W-77TPS or †♦ W-77DS or ♦ W-77TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Dial Light	89-7	#47
M4	Dial Light	89-7	#47
M5	Jewel Light	89-7	#47
M6	Lamp	89-15	117V 7W (Phono Compartment)
M7	Tuning Cap.	19-246	6 Gang (AM Sections: Ant. 17-575MMF, RF 33-375MMF, Osc. 14-156MMF)
M8	Switch	69-217	Function Selector, Rotary Wafer Type
M9	Phono Motor	012982	Chassis 567.41002, 567.41010, 567.41015
	Phono Motor	012979	Chassis 567.41102, 567.41110

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	310270	ON-OFF-Volume, Function Sw. Models 7061, 7061A
Knob	310268	ON-OFF-Volume, Function Sw. Models 7062, 7062A, 7063
Knob	52-594	ON-OFF-Volume, Function Sw. Models 7067, 7068
Knob	310269	Tuning, Treble, Bass Models 7061, 7061A
Knob	310267	Tuning, Treble, Bass Models 7062, 7062A, 7063
Knob	52-593	Tuning, Treble, Bass Models 7067, 7068
Cabinet	440379	Mahogany Models 7061, 7061A
Cabinet	440380	Blonde Oak Models 7062, 7062A
Cabinet	440381	Maple Model 7063
Cabinet	42-910	Mahogany Model 7067
Cabinet	42-911	Limed Oak Model 7068

RETMA MEMBER

TRUETONE MODEL D5605A

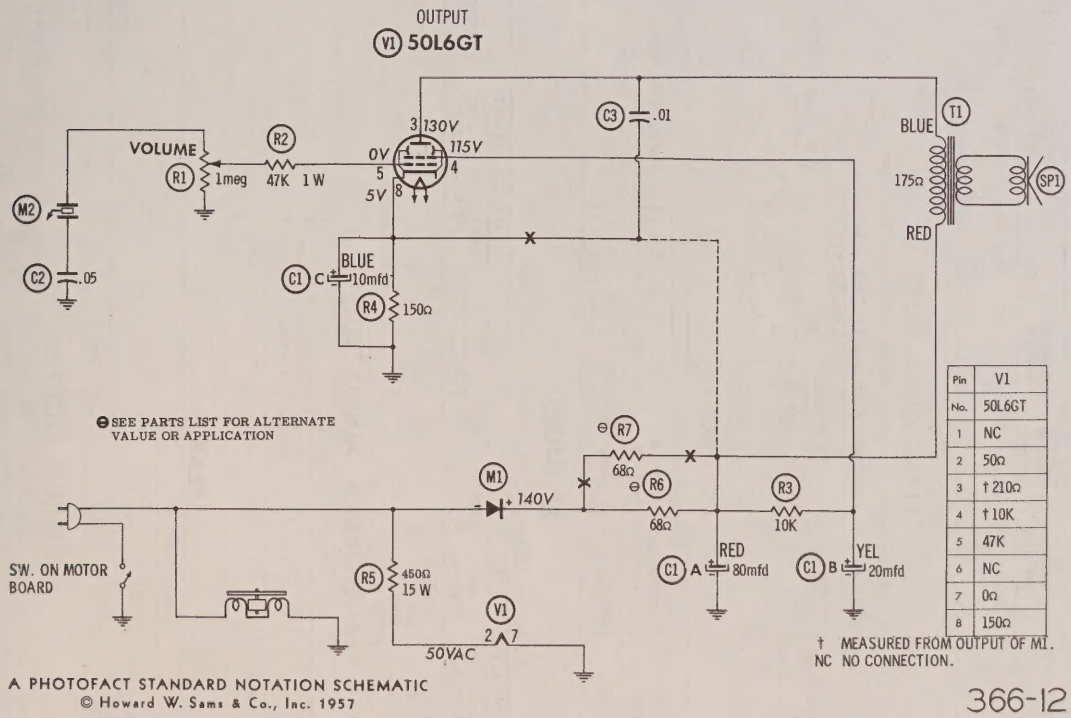
TRUETONE MODEL D5605A

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRUETONE MODEL D5605A

TRADE NAME	Truetone Model D5605A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (One)	Type 50L6GT Output
POWER SUPPLY	110-125 Volts AC-60 Cycle RATING .25 Amp. @ 117 Volts AC

RECORD CHANGER - MONARCH MODEL VA6



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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	50L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	EC-48	PRS150/25V 8040/20	BBRQ53215C		CDB-T-1002	CST-534	R2311 *
B	20	150							
C	10	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	400	PC-5	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	.01	400	PC-7	BPD-01	D6-103	CUB4S1	ED-01	GEM-411	4TM-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	VC-79	AB-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	47K		IR-10	BTS-47K	
R3	10K		IR-37	BTS-10K	
R4	150Ω		IR-14	BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R5	450Ω 5%	15	WR-25		
R6	68Ω			BTS-68	Note 1
R7	68Ω			BTS-68	Note 1

Note 1. Some versions may replace R6 & R7 with one 47Ω 1W unit (Part #IR-41).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2450Ω	3-4Ω	Part of Spkr. SPK-22	Z1101	A-3025	A-3332	26S58 ①	S-12X	① Drill new mounting hole.

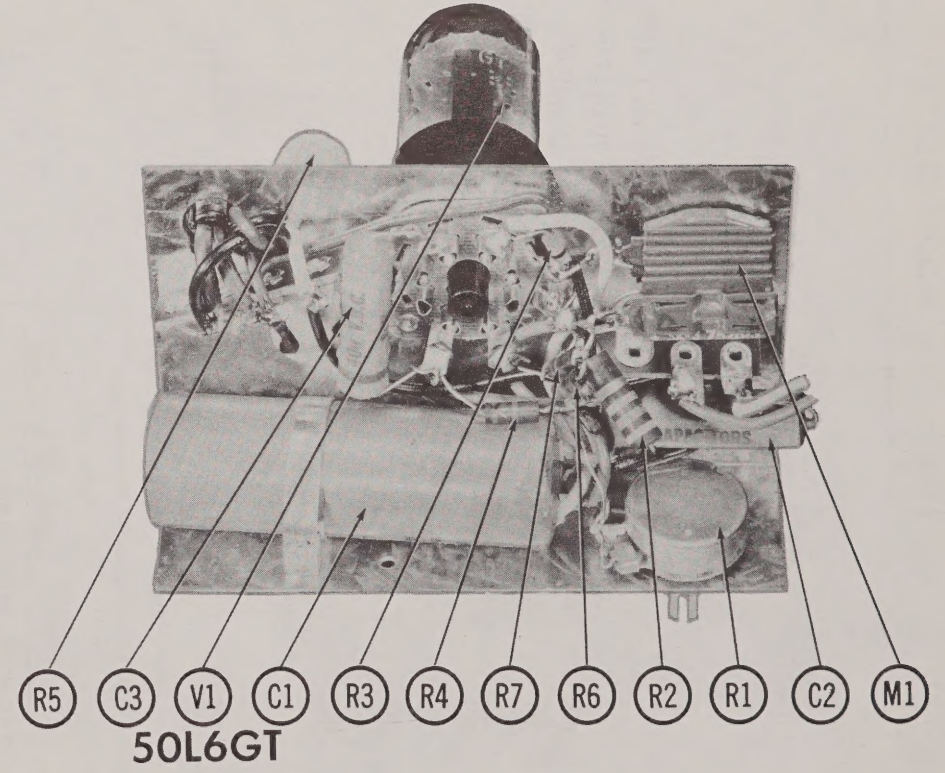
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SPK-22 ①	4A07	① Includes T1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.052A	SR-2	1003A	RS075Q	6S75	5M4	75	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	TRUETONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		310-TB	N-8-1 N-8-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

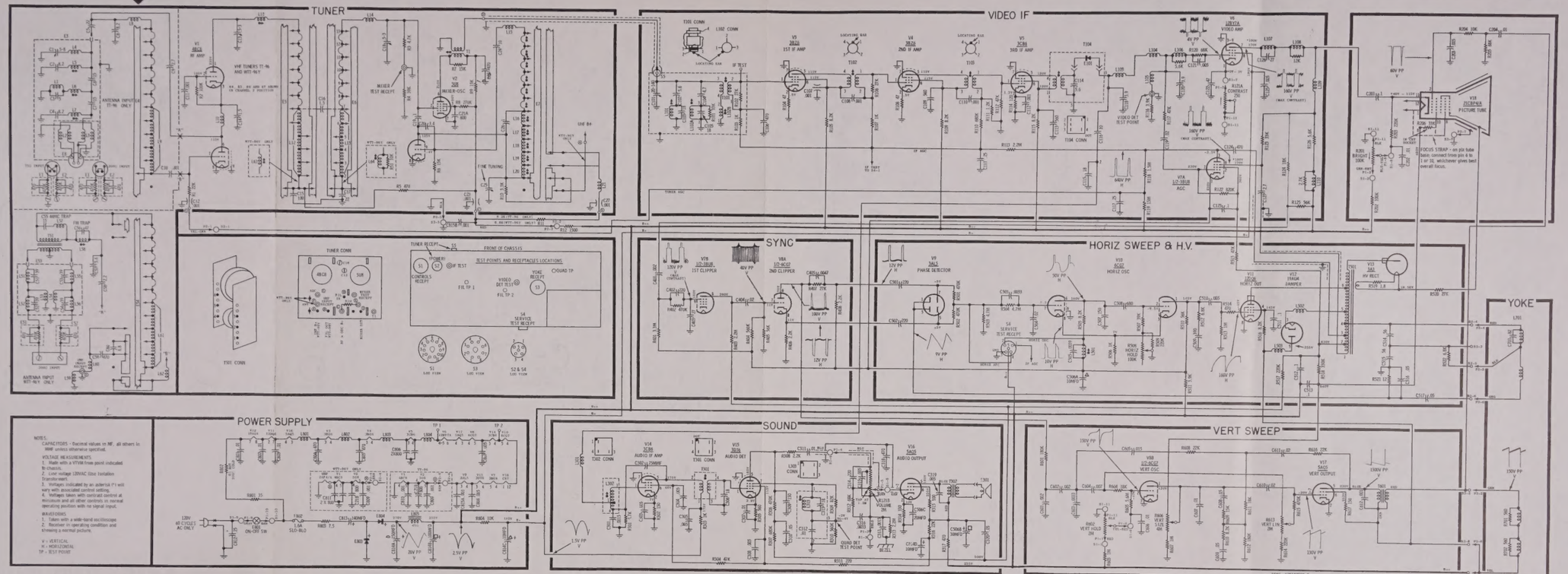
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	TRUETONE PART No.	JENSEN PART No.	WALCO PART No.	
M3		†CR-55 or ♦CR-55D	†W-64S or ♦W-64D	78 RPM Needle
		†CR-55LP or ♦CR-55LPD	†W-64MGS or ♦W-64MGD	33 1/3 - 45 RPM Needle

† Jewel ♦ Diamond

MOTOROLA
MODELS CHASSIS
Y21K70B, M TS-542Y
Y21T37B, M "
21K70B, M TS-542
21T37B, M "


TUNER
VIDEO IF
SYNC
HORIZ SWEEP & H.V.
YOKE
POWER SUPPLY
SOUND
VERT SWEEP
TEST POINTS AND RECEPTACLES LOCATIONS
FRONT OF CHASSIS
NOTES
CAPACITORS - Fractional values in MF, all others in MMF unless otherwise specified.
VOLTAGE MEASUREMENTS
1. Made with a VTVM from point indicated to chassis.
2. Line voltage 120VAC (Use Isolation Transformer).
3. Voltages indicated by an asterisk (*) will vary with associated control setting.
4. Voltages taken with controls set at minimum and all other controls in normal operating position with no signal input.
WAVEFORMS
1. Taken with a wide-band oscilloscope.
2. Receiver in operating condition and showing a normal picture.
V = VERTICAL
H = HORIZONTAL
TP = TEST POINT

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SCHEMATIC COURTESY OF MOTOROLA INC.

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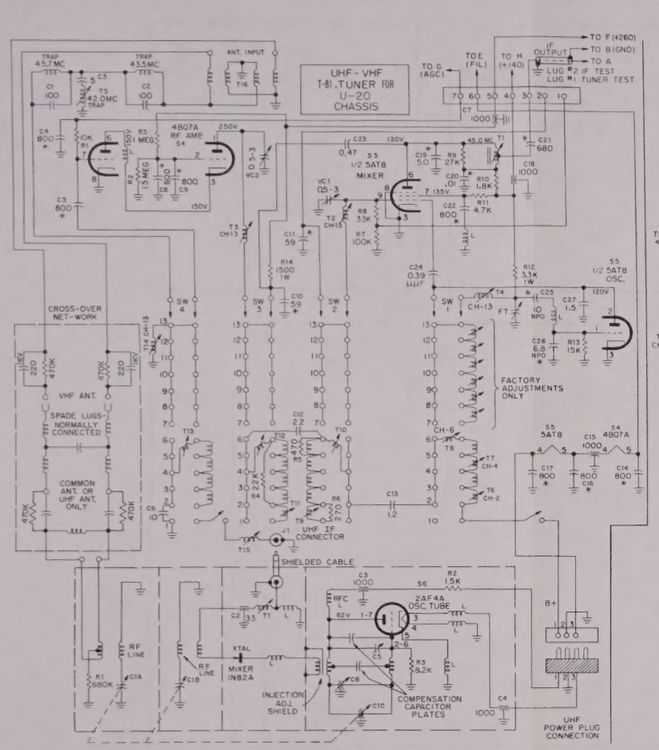
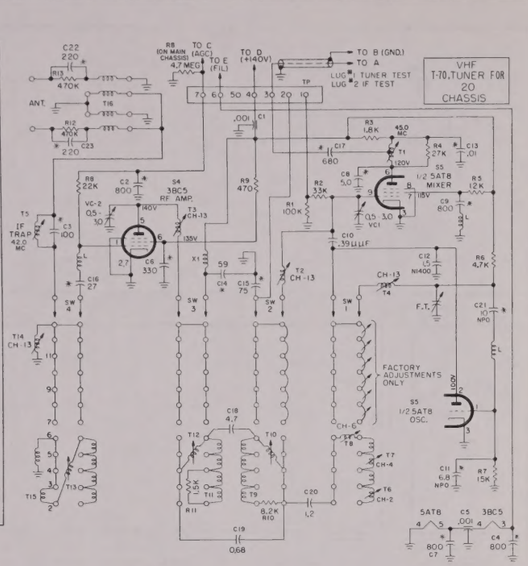
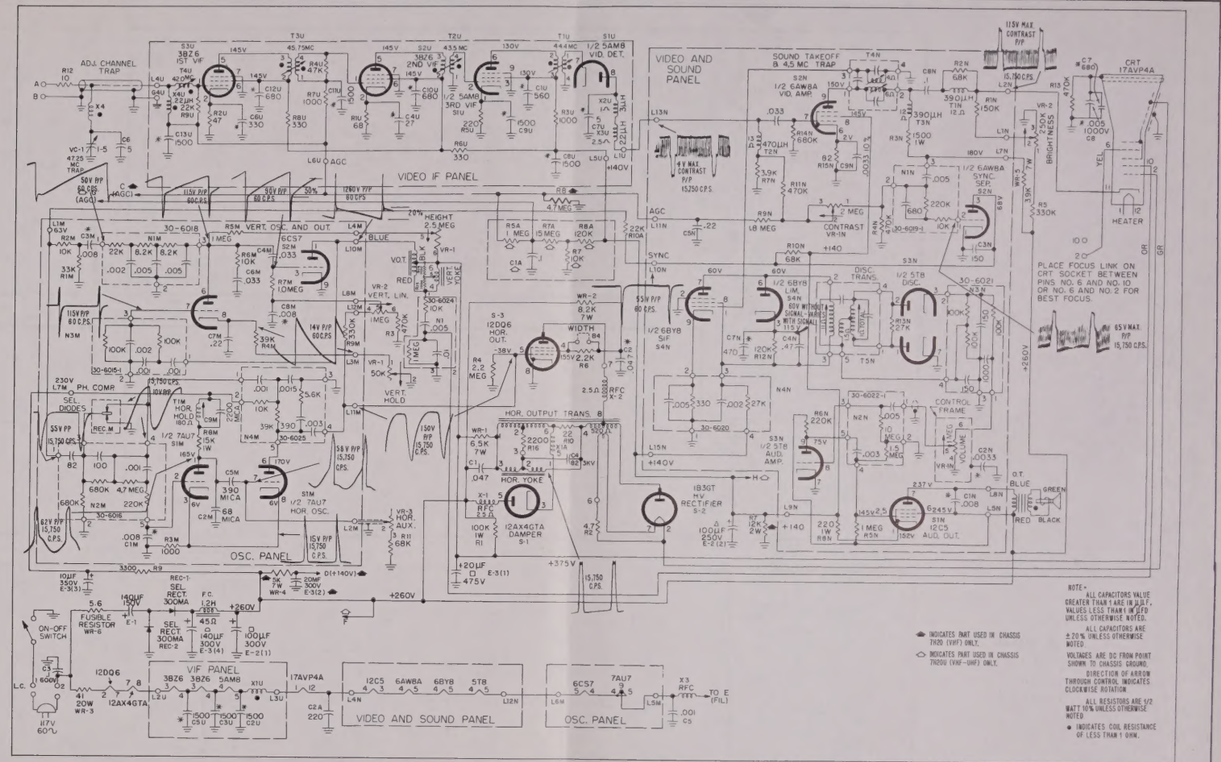




PHILCO
MODELS CHASSIS
E3034B, SA, SS 7H20
UE3034B, SA, SS "



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